

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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LONDON, SATURDAY, OCTOBER 2, 1875.

[WITH SUPPLEMENT.] {PRICE SIXPENCE. PER ANNUM, BY POST, £1 4s.

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
Established 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Banks, and Dock Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value. BUSINESS in all COLLIERIES and IRON Shares, and in the principal WAGON and MANUFACTURING COMPANIES of the NORTH of ENGLAND and SCOTLAND.

Mr. J. H. CROFTS, having no established CORRESPONDING AGENCIES in all the Chief Towns of the United Kingdom, is prepared to deal in the various LOCAL Stocks and Shares at close market prices.

COTTON SPINNING SHARES bought and sold, including those of Oldham, Bury, Heywood, Darwen, Accrington, and neighbouring districts. This description of security can be purchased to pay the investor very fair interest upon outlay.

Accounts opened for the fortnightly Settlement.

Monthly and Daily Price Lists issued.

Bankers: City Bank, London; South Cornwall Bank, St. Austell.

SPECIAL DEALINGS in the following, or part:—30 Asheton, 27s. 6d.; 30 Bampfylde, 18s. 6d.; 5 Bog, 7s. 9d.; 5 Blison, £10; 15 Cardiff and Swansea, £3; 50 Chapel House, £4; 5 Cape Copper, 10s. 6d.; 10 East Caradon, £1 15s. 6d.; 25 Eberhardt, £1 17s. 6d.; 20 Flagstaff, £1 5s.; 50 Javali, 30s. 6d.; 30 Lave's Chemical, £7 2s. 6d. ex div.; 15 Myndy Iron, 20s. 6d.; 20 Marke Valley, £3 7s. 6d.; 50 Old Trebuturg, 4s. 9d.; 25 Pateley Bridge, 100 Plymouth, 10s.; 40 Prince of Wales, 7s. 6d.; 75 Parys Mountain, 50 Penstruthal, 12s. 6d.; 10 Tankerville, £10 10s.; 20 Thorp's Gawber, 10 West Chiverton.

WANTED.—Positive Assurance Shares, and North Eastern Banks.

* Shares sold for forward delivery (one or two months) on deposit of 20 per cent.

Business on hand in all the leading TIN, COPPER, and LEAD Shares.

RAILWAYS.—SPECIAL BUSINESS. Fortnightly accounts opened on receipt of the usual cover.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

PLYNIMMON LEAD MINE.—SPECIAL BUSINESS in these shares.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

PATELEY BRIDGE LEAD AND SMELTING.—Special Business in these shares. A few for sale at lowest prices.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER,
44, THREADNEEDLE STREET, LONDON, E.C.

Transacts business in MINING and COLLIERIES Shares of every description, English and Foreign Stocks, Colonial Government Bonds, Railways, Banks, and Miscellaneous Shares, and all Securities dealt in on the London Stock Exchange.

for INVESTMENT or SPECULATION.

Purchases and Sales negotiated in Unmarketable Stocks and Shares.

Speculative Accounts opened for the fortnightly Settlement.

References given and required when necessary.

A Stock and Share List forwarded to bona fide Investors free on application.

Bankers: The National Provincial Bank of England, E.C.

SPECIAL BUSINESS in the undermentioned, at close market prices:—

Asheton.	Emma (Silver).	Froman Gravel.
Bog.	Flagstaff.	Richmond.
Birdseye Creek.	Frontino.	South Condurrow.
Carn Brea.	Gold Run.	Sweetland Creek.
Cape Copper.	Javali.	St. Patrick.
Cathedral (Copper).	Ladywell.	Tankerville.
Chapel House Colliery.	Marke Valley.	Tincoff.
Chenage (Silver).	Pennerley.	Van.
Dolcoath.	Parys Mountain.	Van Consols.
Don Pedro.	Penstruthal.	West Chiverton.
Devon Consols.	Pateley Bridge.	West Tankerville.
Eberhardt.	Port Phillip.	Wheal Uny.

IMPORTANT.—Intending investors should lose no time in securing shares in well selected mines at the low quotations now ruling, as an early and substantial advance may be confidently relied upon. Provided proper discrimination is exercised in the selection, there are, at present few, if any, other securities in the market which offer such a favourable field for investors, and considering the extremely low prices of the majority of shares in sound dividend and progressive mines, anyone investing now has the advantage of a minimum of risk, and will in all probability be enabled to realise handsome profits within a short period.

W. H. B. will be happy to furnish, on application, a list of shares which are likely to have an early rise in market value.

WILLIAM HENRY BUMPUS, SWORN BROKER.

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MESSRS. PYNE AND ASHMEAD,

CITY MINING AGENTS.

LONDON MANAGEMENT OF COMPANIES UNDERTAKEN.

ACCOUNTS AUDITED, LIQUIDATIONS CONDUCTED.

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6, BIRCHIN LANE, E.C.

SPECIAL BUSINESS in:—

Allam Colliery.	Eberhardt.	Anglo-Cable.
Chapel House.	Cardiff and Swansea.	Direct Cable.
Cape Copper.	Richmond.	Law's Chemical.

Consols, Foreign Bonds, Railways, and every security quoted on 'Change bought and sold. Clients giving the usual 'cover' can open accounts for the fortnightly settlement. References given when necessary in most of the leading towns of the United Kingdom.

Bankers: Bank of England, London and Westminster, and City Bank.

JOHN RISLEY (SWORN), STOCK AND SHARE BROKER,

77, CORNHILL, LONDON.

Turkish Six Per Cents. of 1854, 1858, 1862, 1865, 1871, and 1873 specially recommended; also Wheal Grenville, Treleigh Wood, Parys Mountain, Wheal Pevor, and Crebor shares.

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MESSRS. W. J. TALLENTIRE AND CO.,

STOCK AND SHARE BROKERS.

20, CHANGE ALLEY, CORNHILL, LONDON, E.C., transact business in

Stock Exchange Securities and Mining Shares of every description.

A Selected List of Safe Investments forwarded to intending investors post free upon application. Fourteen years' experience.

MR. THOMAS THOMPSON, JUN., 1, PALMERSTON

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Some valuable hints as to the purchase of mining shares will be found in Mr. Thompson's 'Investment Circular' for Oct. now ready, post free, price 6d.

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Bankers: London and Westminster, Lothbury.

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29, BISHOPSGATE STREET, LONDON, E.C. (Established 19 Years),

can sell the following SHARES, at prices annexed:—

20 Allam Colliery.	20 Frontino, 21s.	20 Pateley Bridge, £6 ½.
20 Asheton, 25s.	20 Gladstone (Clit.), 45s.	70 Penstruthal, 12s.
20 Birdseye, £1 17s.	50 Gladstone, 20s.	100 Plymouth, 10s. 6d.
20 Bedford Unit, 18s.	50 Gold Run, 17s. 3d.	50 Prince of Wales, 3s. 9d.
70 Bog, 8s.	25 Hington, 21s.	40 Parys Mount, 11s. 9d.
50 Chantale, 11s.	80 Javali, 13s. 6d.	60 Rica, 4s. 3d.
20 Chapel House, £3 18 9	20 Ladywell, £2 15s.	10 Richmond, £10 ½.
50 Cathedral, 26s.	35 Last Chance, 20s. 6d.	20 Sweetland, £3 1s.
25 Colorado, £2 13s.	20 Marke Valley, £3 ½.	100 So. Ro. Grav., 10s. 6d.
50 Don Pedro, 16s. 6d.	50 Monydd Gerdud, £6 ½.	40 St. Patrick, 22s. 6d.
25 East Caradon, 31s.	20 New Quebada, £3 13 9	10 Tankerville, 26s. 9d.
45 Emma, £1 11s.	50 Prince Patrick, £3.	70 West Maria, 6s. 9d.
50 Flagstaff, 26s. 3d.	70 Port Phillip, 16s. 6d.	25 W. Tankerville, 26s. 9d.

INVESTMENTS IN STOCKS AND SHARES.—

BRITISH AND FOREIGN STOCKS AND SHARES BOUGHT AND SOLD.

List of Prices and other information sent on application.

Bankers: The Alliance Bank (Limited), London.

Mr. P. WATSON, 79, OLD BROAD STREET, LONDON, E.C.

(Close to Stock Exchange.)

FINANCIAL OPERATIONS NEGOTIATED.

MR. ALFRED E. COOKE, STOCK AND SHARE DEALER,

76, OLD BROAD STREET, LONDON.

(Established 1853.)

Mr. COOKE offers the following Shares, or any part, free of commission:—60 Bampfylde, 18s. 6d.; 20 Monydd Gerdud, £6 ½; 50 Plymouth, 10s.; 10 Cakemore Colliery, £5; 10 New Sharlston; 25 Saint Patrick, 22s. 6d.; 25 Cathedral, 26s.; 50 No. Prince Patrick; 100 Tyllywyd, 21s.; 50 Caldbeck Fells, 8s. 6d.; 45 Pateley Bridge; 5 Van.; 40 Gladstone, 20s.; 50 Parys Mount, 11s. 3d.; 10 Van Consols.; 50 Javali, 12s. 6d.; 60 Penstruthal, 12s.; 100 West Maria, 6s.; 25 Llanrwst Lead; 50 Positive, 15s.

Shares having no quotations affixed may be had at lowest market prices.

Business transacted in nearly all Coal, Iron, Manufacturing, and Miscellaneous Shares.

BUYER of Chapel House and Tyllywyd.

Mr. COOKE can recommend shares in a few mines which are now very low, and certain to advance. Bona fide investors should apply at once. No sound advice can be obtained.

Mr. COOKE's Circular for October will be issued in a few days. Tabulated form of investment, most valuable and useful for reference. Send address at once, with stamp.

MR. T. E. W. THOMAS, SWORN SHARE BROKER,

3, GREAT WINCHESTER STREET BUILDINGS, E.C.

Established 1857.

The following are the latest prices at which business could be done. Where the difference between the buying and selling price is wide transactions may be effected at an intermediate price:—

Buyers.	Sellers.	Buyers.	Sellers.
Birdseye Creek.....	1 ¼ .. 1 ½	Plynlimmon.....	9s. 9d. ... 10s. 9d.
Bog.....	7s. ... 8s.	Port Phillip.....	14s. ... 16s.
Chapel House.....	3 ¾ .. 4 ¼	Richmond.....	£ 9 ½ .. £ 10 ½
Devon Great Consols.....	2 ¾ .. 3 ¼	Roman Gravel.....	£ 11 ¾ .. £ 12 ¾
Dolcoath.....	47 ... 49	St. Patrick.....	1 ... 1 ¼
Don Pedro.....	14s. ... 16s.	South Carn Brea.....	13 ¾ .. 14 ¾
Eberhardt.....	7 ½ .. 7 ¾	South Condurrow.....	5 ¾ .. 6
East Caradon.....	1 ½ .. 1 ¾	So. Roman Gravel.....	10s. ... 12s.
East Laveall.....	7 ¾ .. 8 ¼	South Tolarne.....	2 ¾ .. 3 ¼
Flagstaff.....	1 ½ .. 1 ¾	Sweetland Creek.....	2 ¾ .. 3 ¼
Gawton.....	12s. 6d. ... 15s.	Tankerville.....	26 ¾ .. 27 ¾
Gold Run.....	16s. 9d. ... 17s. 3d.	Tincoff.....	26 ... 27
Hington Down.....	17s. 6d. ... 22s. 6d.	Van.....	26 ... 27
Javali.....	12s. ... 13s.	Van Consols.....	13 ¾ .. 14 ¾
Marke Valley.....	3 ¾ .. 3 ¾	West Chiverton.....	15 ... 17
New Quebada.....	3 ¾ .. 3 ¾	West Maria.....	8s. ... 6s.
New Rosario.....	4s. ... 5s.	Wheal Grenville.....	1 ¾ .. 1 ¾
Parys Mountain.....	11s. ... 13s.	Wheal Pevor.....	3 ¾ .. 3 ¾
Pateley Bridge.....	6 ... 6 ½	Wh. Kitty (St. Agnes).....	3 ¾ .. 3 ¾
Pennerley.....	1 ¾ .. 1 ¾	Wheal Pevor.....	3 ... 3 ¾
Penstruthal.....	10s. ... 12s.		

PATELEY BRIDGE.—This company has been brought out on fair and equitable terms, and the property is a valuable one. The shares, £5 fully paid, are, extend sively dealt in, and likely to go to a much higher price than they now are.

MR. WILLIAM WARD

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SELL the FOLLOWING SHARES, free of commission:—

20 Alamillos, £1 18s. 9d.	50 Flagstaff, 22s. 6d.	70 Penstruthal, 12s.
20 Almada, 16s.	30 Frontino, 21s. 6d.	30 Pateley Bridge, £6 ½.
25 Australian, £2 1s. 3d.	70 Gold Run, 17s. 3d.	50 Parys Mountain, 12s.
50 Birdseye, £1 18s. 6d.	10 Great Lacey, £16 ½.	30 Plynlimmon, 10s. 6d.
70 Bog, 7s. 9d.	10 Gawton, £10.	40 Richmond, £10.
20 Bedford United, 18s.	80 Hington, 21s.	20 Roman Grav., £12 ¾.
20 Cathedral, 26s. 6d.	75 Javali, 13s.	75 St. Patrick, £1 2s. 6d.
50 Chapel House, £4.	60 Ladywell, £2 16s. 3d.	20 South Condurrow, £6.
45 Chantale, 11s. 3d.	40 Marke Valley, £3 ½.	25 Sweetland Ck., £3 ½.
20 Devon Consols, £2 ½.	50 Malpas, 11s.	50 So. Roman Grav., 11s.
50 Don Pedro, 16s. 9d.	30 Monydd Gerdud, £6 ½.	20 Tankerville, £10 ½.
5 East Laveall, £3.	50 New Rosario, 5s. 6d.	10 Van, £26 18s. 9d.
20 Eberhardt, £7 16s.	50 Port Phillip, 16s. 3d.	50 Van Consols, £1 17s.
50 East Van, 30s.	70 Pennerley, £11 ½.	75 West Eagair Lie, 10s.

Special Business in the Oregon Gold Mines.

MESSRS. HARLAND AND CO., STOCK AND SHARE

DEALERS, 235 and 236, GRESHAM HOUSE,

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Bankers: London and County Bank.

Messrs. H. and Co. have Special Business in Chapel House and Allam Collieries Shares, also in the shares of the Oregon Gold, and the Patent Ligno Mineral Paving Companies, and will be happy to give full particulars of the above desirable investments on application.

Dealings at closest market prices in all kinds of Stocks and Shares.

MR. W. TREGELLAS, 122, BISHOPSGATE STREET

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Accounts opened for the fortnightly settlement, and shares sold for forward delivery on receipt of cover.

SPECIAL BUSINESS in the following British and Foreign Mines, Colliery, and other Shares:—

10 Birdseye.	60 Great W. Van, 6s. 9d.	40 Pr. Patrick, £3.
15 Blison & Crump, £10.	30 Grogwinion, £3 ¾.	50 Richmond, £10.
70 Bog, 7s. 6d.	50 Gawton, 12s. 6d.	120 Rica, 4s. 6d.
50 Caldbeck Fells.	85 Hington Down, 18s. 3	75 Rookhope.
50 Clea Hill, 4s. 3d.	20 Hornachos.	30 Sweetland, £3.
50 Cathedral, 26s. 6d.	50 Javali, 13s.	20 South Aurora, 9s.
30 Cedar Creek, 13s. 9d.	50 Killfrith, open wtd.	100 So. Carn Brea, 37s. 6d.
30 Carr Brea, £3 ½.	50 Low Chance, 21s.	50 So. Roman Grav., 11s.
30 Chicago.	50 Ladywell, £2 16s. 3d.	40 St. Patrick, 22s.
75 Chantale, 12s. 6d.	50 Malpas, 10s. 6d.	30 Thorp's Gawber, £7 ½.
60 Chapel House, £3 ¾.	55 Malabar, 9s.	100 Tecoma, 12s. 3d.
45 Colorado.	40 Marke Valley, £3 ½.	15 Tankerville, £10 ½.
10 Cook's Kitchen.	30 Native Guano.	10 Tincoff, £27 ½.
75 Don Pedro, 16s.	65 New Quebada, £3 ½.	30 Van Consols, 40s.
20 Devon Con., £2 16s. 9d.	60 Old Trebuturg, 4s.	5 Van, £27.
40 East Caradon, 25s. 9d.	40 Pateley Bridge, £6 ½.	10 West Chiverton, £15 ½.
30 East Van, 31s.	40 Pennerley, 28s. 9d.	50 West Maria, 5s. 9d.
35 Emma, £1 ½.	90 Penstruthal, 12s.	30 Western Andes, £5 ½.
20 Eberhardt, £7 ½.	90 Port Phillip, 16s. 9d.	15 Wheal Kitty.
50 Flagstaff, 21s. 9d.	60 Plynlimmon, 10s.	40 W. Tankerville, 23s. 9d.
60 Frontino, 21s. 6d.	70 Parys Mountain, 12s. 3	10 Wheal Jane.
70 Gold Run, 17s. 6d.	80 Prince of Wales, 3s. 6	20 Wheal Grenville, £2 ¾.
55 Great Lacey, £16 ½.		10 Wheal Uny.

MR. T. P. THOMAS, MINING AGENT,

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Business transacted in Mining and Colliery Shares, and information given as to the appearances and prospects for the guidance of investors.

T. P. THOMAS has SPECIAL BUSINESS in Pateley Bridge, at £6; New Sharlston Colliery, at £3 ¾; St. Patrick, at 22s. 6d.; South Condurrow, at £6 ½; and Wheal Kitty (St. Agnes), at £3.

MR. CHARLES THOMAS,

MINING AGENT, STOCK AND SHARE DEALER,

3, GREAT ST. HELEN'S, LONDON, E.C.

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Should read the above Investment Circular. It is a Safe Guide to Investors.

Messrs. GOULD SHARP AND CO., 33, POULTRY, LONDON, E.C.

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MINING ENGINEERS AND AGENTS, ACCOUNTANTS, AUDITORS,

MANAGERS OF PUBLIC COMPANIES, &c.

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Mineral Properties Inspected.

LONDON OFFICES.—30, MOORGATE STREET, E.C.

THE LANTRISANT TIN PLATE WORKS.

Original Correspondence.

THE PROSPECTS OF MINING AND THE METAL TRADE DURING THE REMAINDER OF 1875.

Two-thirds of the present year have transpired, and the autumn and closing winter months are before us. It is the appropriate juncture to enquire what are the prospects for those who have property embarked in tin, copper, and lead mines—the metals for which the British isles have so long been famous.

Mining is subject to ebbing and flowing fortunes, as all connected with practical mining know, sometimes to their cost, but happily oftener to the success of their ventures and the increase of their capital. We have just now passed through a very dull time both for Welsh and West of England mining, and the question may be anxiously as well as fairly asked—Are we through it? It will be acknowledged that the *Mining Journal* has encouraged the miner through many a dark day; we have never been among Job's comforters, while we have been sternly faithful in depicting the metal markets as we found them—in affording all the information concerning them that could be obtained from valuable sources, and indicating the probable demand from the position and tact of our customers and the stocks of metals in the hands of the principal holders. We have also conscientiously abstained from buoying up the holders of mining property and those engaged in the active working of the mines with false hopes. We shall, therefore, have an attentive as well as a willing audience when we now declare that there is every reason for expecting better prices for metals, and a more liberal investment in mining property and more extensive mining operations. The value of tin and copper in the markets has been gradually rising, and the former has made a good advance. With regard to the latter, the prices of ore and of wrought copper have been disproportionate to one another, to the disadvantage of the latter, so that the manufacture has been deterred, which, of course, renders stocks lower, and must eventually quicken the demand. It has been asked whether ores will become cheaper or the wrought copper dearer? It is obvious that the latter is the natural result of the situation, and that copper mining must inevitably become more active. At the end of the autumn or beginning of winter the Baltic is closed to commerce—sometimes very suddenly, at others gradually. Dealers in metals say, "If we have an early and severe winter in these waters it will check the improving trade which is now undoubtedly indicated, and which must, in the nature of things, last through the autumn." But our Baltic customers make their calculations in view of the approach of winter just as we do, and with more sagacity, because their experience is nearer, and purchases are made and stocks laid in preparatively, so that the last few weeks of the autumn are usually very active, and as stocks are now low in Russia, Denmark, Sweden, and Norway, there is every reason to expect a very brisk trade from this until well into the month of November, and a fair trade to the end of the year. Mining for tin, copper, and lead must, therefore, have another season of prosperity, and all who wish to invest in mines should do so now before prices "go ahead," as is always the case when a term of activity sets in.

The aspect of mining now presented justifies the selection of either dividend-paying or good prospective mines for investment, and those who do so at once will have no reason to regret it.

Mr. FORSTER, the member for Bradford, said in his remarkable speech the other day that "he who would forecast the future must be well acquainted with the past, for the past produced the future." With this purpose we invite our readers to review the metal trade for the two-thirds of the year expired, and examine what light it throws upon the remaining third, and what prospect there is for our Cornish, Devon, Cardigan, and Manx mines.

Our imports of tin in blocks, ingots, bars, and regulus, for the month of August was of the declared value, round numbers, of 106,000*l.*, and for the two-thirds of the year already expired, considerably over a million. During August more than one-fourth of the imported tin was re-exported, and during the portion of the year which has transpired about the same proportion. This rate has been preserved for some years. Our imports, however, have fluctuated considerably. The value in 1873 was 750,000*l.*; in 1874 only a little over 500,000*l.*—scarcely more than half this year's imports.

Our tin imports have for a long time been mainly from the Straits, through the Dutch metal merchants. From Queensland and some parts of Australia there have been further supplies. It is our opinion that foreign tin will only be introduced in considerable quantities in the English market for a time, and that as the existing foreign mines grow deeper the expense of working at a great distance from the markets for machinery and for money will render all competition with the British market impossible. There does not appear to be any accredited tin deposits in the great mineral districts of South America which are of importance, either on the eastern or western slopes of the Andes. The reports of "tin fields" on the western slopes of the Cordilleras have not been realised. Stream tin has been found, but the sources from which the streams washed it have not been discovered. Repeated rumours that tin has been found east and west on the slopes of the Rocky Mountains have not been verified. We are convinced from a searching investigation into the subject of the probable supplies of foreign tin that England has nothing to apprehend in the way of competition, and that, in fact, what foreign tin comes to hand is, instead of injury, an advantage, because most of it will be "re-exported," as the phrase is, and the rest will be worked up with English tin, to which it is a good accessory in our tin manufactures.

With regard to our exports of British tin the statistics are to this effect. During the two-thirds of the year which have transpired the value of quantities sent abroad was 349,766*l.*, which proves that although this is a tin-producing country we have lately imported as much, or about as much, as our re-exports of imported tin and the exports of our own tin put together. This is a result for which scarcely anyone interested in metals and mining would be prepared, but it is so. Our exports have fallen off considerably, over half-a-million in value having been exported last year and the year before in the periods corresponding. This is attributable to a falling off in the trade with the United States and France. We only sent one-fourth of what we exported last year to the United States, and one-half to France. Our tin trade with Germany and Turkey also diminished, but with Russia it increased, as it is used for canisters in the large Russian overland imports of Chinese tea. There has been a noticeable indisposition generally among our customers to take our tin, which we attribute to the general depression of trade, and not to any neglect of this popular commodity, nor any disadvantage in dealing with us.

The copper trade is a very great one; we are large importers and large sellers. It is our practice to import the ore and segregate and work it into copper. This year so far we did this to the value of close upon half-a-million, and for years in the corresponding periods there has not been a range of difference exceeding 100,000*l.* Our chief sources of supply have been Chili, Ireland, and Spain. Australia this year sent us very little, about one-seventh of what she sent in 1873.

Copper regulus we mainly get from Chili, and the supply has largely increased this year over last. Our imports of regulus from all quarters increase very largely. The same may be said of unwrought or part wrought copper from year to year. It is mainly derived from Chili and Australia. Our total imports of copper amounted to about 4,000,000*l.* this year so far. Our "re-exports" exclude all forms but unwrought, or part wrought, and average 1,500,000*l.* a year in the first two-thirds of the year, but so far in 1875 little more than half the quantity was sent away; of course this throws a larger proportion of foreign copper on our own market, which is now worked off.

The exports of British copper in every form this year has been valued at 2,081,569*l.*—rather less than the average, but we are strongly inclined to think that by the end of the year it will exceed the average, as the demand for yellow metal or sheathing is considerable and increasing.

The value of our lead imports for the first two-thirds of the year

has been unusually large, amounting to 1,184,948*l.*, of which we exported none whatever. The export of British lead in the form of pig, rolled, sheet, piping, and tubing was valued at about half our imports, and was a fair average export business. The exports to the United States continue to decline sadly, but to China there is a continuous increase, as there is also to Australia, and small parcels to a great variety of countries that take little or also augmenting.

We think that an impartial review of the first two-thirds of the year is not discouraging for what remains of it. Our wonder is that amidst so many convulsions in the money markets of the world, and the long lists of commercial failures at both sides of the Atlantic, so much has been done. We have certainly produced less, but our stocks are low, money is cheap. Mines are attracting the attention of capitalists, and the dawn at last of the good time coming appears in the horizon.

THE GREAT AURIFEROUS GRAVEL BANKS OF CALIFORNIA.

There is no subject more entitled to the serious attention of both the scientific and the financial world in Europe than the gigantic works which have been executed for the last few years in California, for the successful working by the hydraulic process of the immense gravel deposits which exist in that country. Experience in mining has demonstrated that whenever foreign capital has been invested in the development of gravel properties it has always been, under honest management, rewarded by the most satisfactory returns. Quartz mining, notwithstanding the sudden wealth which it occasionally brings to miners, has often been the source of disappointment. Gravel mining, on the contrary, carried on as it is now, on a large scale, has become a safe, lucrative, and permanent industry, without any speculative character, and which will soon rank the first among the most legitimate enterprises of the Pacific States.

We extract the following general remarks from several elaborate reports made lately by Colonel Berton, President of the London and Pacific Coast Mining Bureau, upon gravel mines submitted to his examination, and which furnish the most valuable information to our investing public:—

CHARACTER OF GRAVEL.—The formation and composition of auriferous gravel vary according to the place, origin, and combination of rocks in the vicinity, and also according to the variety of phenomena which have accompanied the course of gold. The North Bloomfield gravel has a character of its own. The upper strata is generally of several feet in thickness, and is composed of fine sand and agricultural land, reddened by oxide of iron; this earth is washed easily, and leaves as a deposit the small quantity of gold contained therein, and which pays the expenses. The richness increases as depth is attained. There are found large strata of pure white gravel, composed exclusively of quartz; these quartz consist sometimes of kind of coarse sand, while they occasionally are mixed with cobble and smaller stones—the larger the cobble stones are the more gold they contain in their interstices. Most of these quartz, when broken, are remarkable for their beautiful crystallised composition. They sometimes show free gold, but it is the particles of fine gold disseminated through the mass of quartz gravel which produce the greatest quantity of gold by the washing. These strata are of different thickness and composition; some of them are strongly oxidised and cemented, but they are all more or less auriferous; their thickness varies from 5 to 10, 20, 30, 40, and even 100 feet.

THE BLUE GRAVEL.—The main auriferous stratum is known as the blue gravel, owing to its bluish colour. It contains the larger quantity of gold, and its lower portions, which rest on the bed rock, are nearly always of great richness. Gold is in these parts coarser than in the upper ones, and it is for that reason that this stratum is more particularly sought after by miners, who consider it as the indication of an assured success in the production of gold. It is sometimes of great thickness, such as the blue gravel which is now being washed at North Bloomfield, in the county of Nevada, and which is about 150 ft. in thickness. This blue stratum differs also from the upper ones, in being little more agglomerated and less easy to work. It contains some cement, which is a good indication of gold. Its general composition is of bluish quartz, which are less numerous than the ordinary quartz in the upper strata of the gravel.

RICHNESS OF THE AURIFEROUS GROUND.—The extensive works which have been executed at North Bloomfield, and all soundings taken in most of the strata of that locality, have demonstrated the continuity of the strata through the auriferous gravel. It can, therefore, be asserted that the rich channel running east takes its general course towards Minesota, Forest Hill, Orleans Flat, Moore's Flat, and Woolsey's Flat, mines which are yielding an enormous quantity of gold. At Moore's Flat, the Illinois and Chinese claims, although having been worked for a period of 20 years, produce the same amount of precious metal as on the first day. One of the placers at Forest Hill, situated on the other side of the Middle Yuba river, shows the richest results. The stratum of blue gravel, which is the sun-mit of Table Mountain, it yields a daily average of \$3000 in gold, although the washing is done by hand by 300 miners, and without applying the hydraulic process. Besides the enormous channel, which is the great vein, there is the special channel, through which passes the course of gold, and which is running all along in the lower part of the great channel; it consists of several strata from 15 to 20 ft. in thickness, resting on the bed-rock. According to statements made by nearly all miners, a pan of earth taken indiscriminately from any part of that special channel will show the richest results. The stratum of blue gravel, which is the sun-mit of Table Mountain, it yields a daily average of \$3000 in gold, although the washing is done by hand by 300 miners, and without applying the hydraulic process.

AVERAGE PROCEEDS—OPINION OF THE FRENCH GOVERNMENT ENGINEER, Mr. LAUR.—All the above described strata, whatever may be their richness, do not represent the general value of the placers; it is the other sections of gravel, apparently poor, which by their unlimited extent give a permanent production of gold. Mr. Laur, a distinguished French mining engineer, who was appointed some years ago by the French Government to proceed to California on a scientific mission, stated in his official report the great interest which he took in the examination of the auriferous gravel situated in the above locality. His inspection tour took place in 1860-61, at a time when the great wealth of deposits which have been but recently discovered on the bed-rock had never before been reached. The report of Mr. Laur, published by order of the French Government in the *Moniteur Officiel* of 1861, and later in the *Annales des Mines* (6me serie, vol. 3, p. 313, and following), shows the first practical ground in the question of gold in a clear and concise manner, that the following passages of that report, which refers to the auriferous gravel of North Bloomfield and its immediate vicinity, have been reproduced by Col. Berton in his report upon the same locality.

"At Woolsey's Flat," says Mr. Laur in his official report, "are found the whole series of diluvial deposits. The lower coarse gravels present an average thickness of 40 ft., and are covered by 120 ft. of ground, composed of clay, sand, and agricultural land. The working of these deposits takes two periods of time. During the first the upper ground is removed, and during the second the bank of lower cobble-stones which has been thus uncovered is worked out. The frontage of the upper sands at one of the mines was 90 by 18 metres in length, which was the length of the claim. It was extended back for 60 by 18 metres, which, with the 120 by 36 metres in thickness, gives a total of 31,104 cubic metres of gravel. These 31,104 cubic metres of earth were removed in four weeks, by seven men, by the hydraulic process. They yielded \$800, which gives an average of 13 centimes to the cubic metre. After the removal of that upper stratum the deposit, consisting of cobble-stones, was uncovered on a length of 160 by 45 metres, and with a thickness of 60 metres. That section contained 12,960 cubic metres, which were washed, and yielded \$8000 in gold, or 2 francs 45 centimes to the cubic metre, which is 18 times more than the amount of gold taken from the upper ground." (Woolsey's Flat is in the line of continuation on the north of the North Bloomfield placers.—J. B.)

"At the Illinois claim (adjoining Woolsey's Flat), known for its rich returns, 34,400 cubic metres of gravel yielded 55,120 francs, or about 1 franc 70 centimes to the cubic metre. At Malakoff, where gravel and mixed sand of 18 cubic metres in thickness was washed out, 1620 cubic metres yielded 2650 francs in gold, or 1 franc 64 centimes to the cubic metre."

There are other claims mentioned in Mr. Laur's report, which give about the same returns. "The above observations," continues the French Government engineer, "determine an average yield of about 4 francs per cubic metre of the coarse gravel of which the basis of the ground formation consists. They demonstrate that the working of the stratum composed of fine sand and clay, and which is immediately above the coarse gravel, produces a yield of 28 centimes per cubic metre. They show an average yield of 1 franc 50 centimes to every cubic metre washed out throughout the entire series of strata contained in the ground. From what I have seen I think, after all, that the figure of 1 franc 50 centimes in gold per cubic metre represents with sufficient exactness the average wealth of all the ground of the first diluvial period."

Miners attach great importance in their selection of gravel mines to a marked separation between the sand, clay, and coarse cobble-stones strata. Such separation is, according to the above fact, equivalent to a first concentration of gold. The abundance of quartz cobble-stones is also a good indication of precious metal, which is more appreciated in the placers of the South than in those of the North. But a sure indication of wealth is the abundance of iron sulphurets shown by the bluish tint of the strata. These sulphurets, unfortunately, are sometimes accompanied with hard cement, which gives them a great solidity, requiring energetic means of extraction (such as powder, stamps, &c.). Some of these strata are hard enough to be, as in the case of ordinary quartz ores, crushed and amalgamated. Thus, at Red Dog, Nevada, one of these devices known by the blue lead gravel, yielded as high as 10,000 frs. per day, and by *pluie de boord* (stamp).

The richness of gold in all these various strata of diluvial ground is sufficiently uniform in all the extent of the same deposit to give a very approximate idea of the returns by washing in a batte a few kilogrammes of earth taken in different parts of the ground. Thus, in washing 10 kilogrammes of it in a batte, if there should be found after each operation a residue of one or several particles of gold, and if, moreover, small these particles may be, it is certain that, with the application of the hydraulic process in these cases, satisfactory results will be obtained. It was an unusual thing, concludes Mr. Laur, to see miners taking 4 frs. to 50 frs. per day per man by this method of washing from earth, which has to be washed several times before showing a single particle of gold.

THE HYDRAULIC PROCESS.—"The hydraulic process," continues Col. Berton in his reports, applied to the washing of these immense auriferous gravel deposits, "has accomplished of late the most extraordinary results, not only in diminishing considerably the working expenses, but also in increasing in a wonderful proportion the production of precious metal. A few years ago only the mountains of gravel used to be washed with 50 inches of water, under a pressure of but 60 ft. to 80 ft., and in a canvas pipe. The washing is now done with several thousand inches of water, under a pressure of 200 and 300 ft., and in iron pipes of great dimensions. Water is projected from the pipes with a fearful strength and rapidity against the sections of gravel to be washed out. Some of the mining companies use as many as 1800 and even 8000 inches of water; and the more water is used the larger are the proceeds of the washing. Water is, therefore, the indispensable element of

success. All efforts of companies should tend to bring the largest possible volume of water, and to work on such a large scale as to proportionately reduce the expenses and increase the production of gold. This is so true, that miners now know by experience that auriferous gravel, yielding but 3 cents to the cubic yard can be sometimes worked with profit by the hydraulic process, provided they use their own water. During the suspension of works required for the cleaning up of gold in the sluices for repairs or for other causes, the sluice which has a world-over it may be, can always be sold at a large profit to neighbouring claims, which are in constant need of water. The price paid is 10 to 12 1/2 cents per inch of water, and for a day of 10 hours. At Moore's Flat, Chinese Claim, Illinois and Woolsey's Flat in the vicinity of North Bloomfield, each of the above claims pay \$100 per day of 10 hours for the use of 800 inches of water."

THE TAILINGS—ESTIMATE OF PROCEEDS.—Next to the water the important condition of a permanent and successful working of the mine is a sufficient fall for the carrying off of the tailings. Companies deprived of that natural advantage are obliged to open expensive tunnels as low as possible in the bed-rock in order to get rid of those tailings.

With gold existing with certainty in the gravel, with water and with a required fall, the estimate of the production is nothing but a matter of arithmetical calculation. As soon as claims are properly opened everything will depend upon the quantity of water used at the mines, and the number of cubic yards of gravel washed out per day.

The construction of under-currents has become of late an essential part of the improved hydraulic arrangements. They have given the most favourable results by saving a large quantity of fine gold, which would have been otherwise carried away with the tailings; they have sometimes increased the profits to such an extent as to partially defray the general working expenses at the mines.

AURIFEROUS LANDS IN AMADOR COUNTY.—The character and composition of gold deposits in the flourishing county of Amador, which has a world-wide fame in the sluices for repairs or for other causes, the sluice which has a world-over it may be, can always be sold at a large profit to neighbouring claims, which are in constant need of water. The price paid is 10 to 12 1/2 cents per inch of water, and for a day of 10 hours. At Moore's Flat, Chinese Claim, Illinois and Woolsey's Flat in the vicinity of North Bloomfield, each of the above claims pay \$100 per day of 10 hours for the use of 800 inches of water."

The Volcano Ditch property has a system of ditches, flumes, and reservoirs, which is probably one of the best combined and most complete in existence on the Pacific Coast. The total length of ditches is about 137 miles, which encircle a most valuable and auriferous virgin soil. The water arrangements are most properly adapted for the sale of the water, and for working the ground belonging to the property.

Referring to the great interests attached to the mining industry, Colonel Berton's reports conclude by stating that the great auriferous gravel deposits of California, however small may be their average yield of gold, become always a source of large and permanent profits when they are washed by the hydraulic process, and worked under an economical, energetic, and honest management. He does not hesitate, therefore, to recommend gravel hydraulic mining properties as offering the safest, most profitable, and permanent investment.

THE MINERAL RESOURCES OF THE SOUTH-WEST OF IRELAND—No. XXIII.

[FROM OUR SPECIAL CORRESPONDENT.]

COUNTY KERRY, KENMARE DISTRICT.—The thriving and neat little town of Kenmare is situated at the head of the estuary of that name, and generally known as Kenmare river, in the delightful and well sheltered valley of the Roughty, through which flows the River Roughty (fed by many tributary streams), which falls into the sea at Kenmare, where there is a good pier, alongside of which vessels may load and discharge their cargoes free of port dues. The Roughty valley extends eastward from the town of Kenmare to the village of Kilgarvan, a distance of about eight miles, and is about one mile in breadth. It consists of carboniferous limestone, which a little beyond Kilgarvan wedges out, and is succeeded by clay-slate. It continues about three miles to the west of Kenmare, when it passes into and under the sea. This valley, from very ancient but quite superficial works, appears to be full of metallic minerals. It is sheltered from the north by Macgillycuddy Rocks, and when the former is capped with snow, it being 3410 ft. above the sea level, the Roughty valley enjoys the sunshine of summer. It is equally sheltered from the south by the mountains of Kilgortaree, Glanneroe, Muckna, &c. These great mountain ranges consist principally of clay-slate, with greenstone dykes, quartz rocks, &c. The silver-lead lodes in the Roughty valley are confined to the limestone, and a great "champion copper lode" runs also through the valley along the line, and sometimes in the junction of limestone and clay-slate, while both north and south of the limestone most promising copper lodes are found in the clay-slate, containing rich ore near the surface. About the year 1651 Sir William Petty, the ancestor of the Lansdowne family, obtained large grants of land in and about Kenmare, and commenced working the iron mines in the Roughty Valley, and smelting the ore, which he carried on with vigour while timber lasted; and when the woods were exhausted at the works the iron ore was carried to the woods at the south side of the River Roughty to be smelted, as the slag from the smelting works are still to be seen. The silver-lead and other lodes were superficially worked at the same time, and may be traced for miles in the Roughty Valley; and, strange to say, with but a slight exception, those great iron, lead, copper, blende, and mundaic works have remained idle since 1691, when all the woods of the district were exhausted. If these "ancient works" were not now to be seen and examined it would appear incredible that English capitalists in many instances seem to have been puzzled how to lose money fast enough in foreign schemes, rather than seeing for themselves one of the richest mineral districts in Europe, and which in its development cannot fail to produce enormous wealth.

The site selected by Sir William Petty for his principal mining operations for iron ore, and still known as the "Old Ironworks," was near, or in the junction of, the limestone and light-colour soft clay-slate, and were very extensive. Within my recollection these old works extended over several acres. Many of the old heaps, however, have within the last few years been levelled and cultivated, so that nothing like the former extent of works can now be seen. A fine river runs through the works, and may be utilised in many ways. The great copper lode runs right through the old ironworks, also one or two lead lodes in the limestone; and from the extent of ancient operations it is quite evident that the silver-lead lodes must have been superficially worked at the same time as the iron, there being a tradition in the locality that bars of silver were made by the "old people." The lead ore, no doubt, was smelted as well as iron while timber lasted, and the silver extracted from the lead, hence the tradition. At any rate, it appears to me to be beyond a doubt that whoever re-opens the Old Ironworks will find a grand prize. To re-open these works, however, would be quite a different thing to resuscitating an old mine 200 or 300 fms. deep, and the outlay would be comparatively trifling, as I am quite of the opinion that the greatest depth in the so-called Old Ironworks does not exceed 10 fms. In fact, it is evident that the works began in 1651, and abandoned in 1691 in consequence of the woods being all consumed, were simply surface operations, so that there is no contradiction in the term I use when I say that the resumption of the "ancient works" would be the beginning of "virgin mines."

I mentioned in the beginning of this paper that with but a slight exception the Lansdowne property, forming the Roughty Valley, teeming with metallic minerals, has remained idle since 1691. The slight exception I refer to was sinking 6 fms. on one of the lead lodes, and stopping 30 fms. produced 117 tons of dressed silver-lead ore; it was all dressed by hand labour, and had there been proper mechanical appliances for the reduction of the ore fully 20 tons more would have been the result. The other slight exceptions are—sinking 9 ft. from surface on another lode produced about 4 tons of blende and silver-lead intermixed, and on another lode, in opening a few fathoms, about 20 tons of arsenical pyrites were raised. These trifling operations were carried out between 20 and 30 years ago, since which the sound of a pick or hammer has not been heard in the Roughty Valley. A very sufficient reason can be given for the abandonment of a property with such splendid prospects; four only were connected with it—Death and mercantile losses removed three, and the fourth is still alive, in another country.

SCREW JACKS.—The invention of Mr. E. G. SHEWARD, of Negapatam, India, consists in constructing screw jacks with a double casing and central screw in combination, so as to obtain with a screw jack of a given height nearly double the lift which is obtained by using screw jacks of ordinary construction.

Meetings of Public Companies.

LANESTOSA LEAD AND ZINC MINING COMPANY.

The fifth ordinary general meeting of shareholders was held on Thursday at the office, Queen-street-place.

Mr. WILLIAM COX in the chair.

Mr. HENRY SWAFFIELD (the secretary) read the notice calling the meeting, and the directors' report was taken as read.

The CHAIRMAN moved that the report and accounts be received and adopted. At the last meeting, as the shareholders were aware, authority was given to the directors to make a call of 5s. per share; in pursuance of the authority the directors had made a call of 2s. 6d. per share, being half of the amount which was authorised, and he was happy to inform the shareholders that that amount had been paid.

They had not been so successful as they hoped and desired, but they had been considerably more successful than they had expected. In the first year of the existence of the company the loss was upwards of £4000; in the second year the loss was reduced to £1800, and during the last year, notwithstanding the disturbed state of Spain, they had been enabled to pursue the operations at the mine, although to a limited extent, and the loss incurred for the half-year was barely £600.

His experience of mining was this—that at first they always made some loss, and therefore, when they found the loss gradually diminish it was to be hoped that the loss would soon be replaced by a profit. How long they would be before they reached that desirable position he was unable to say, but if this dreadful war which was now devastating Spain were to cease he believed they would not incur any loss. What would be the result of the explorations now going on no one could say, but they hoped, and they were encouraged in this hope, that they would be enabled to set to work with fresh operations, and that they would be rewarded with success.—Mr. HENRY D. ABERCROMBIE seconded the resolution.

Mr. RICHARD TAYLOR said he had very little to say in regard to the operations of the last six months, because those operations had been considerably hindered and reduced in their importance in consequence of the Carlist war, which had interfered with their miners. They had, however, been able to go on raising a certain quantity of ore from the discoveries made in former periods, and to continue some further trials. Those trials had not been fortunate in meeting with any fresh discoveries of ore, and until very recently there was nothing to indicate an approach to fresh deposits, but quite recently another cavern in the lode was made, which had led them to a very valuable deposit of ore. This discovery had been made so recently that he could say nothing more than that at present. Of course they all hoped it would turn out as valuable as the previous deposit. The directors had determined upon making two trials of two other mines, beside that from which ore had been raised—the Glanfora and Aurora Mines, but the insecurity of the company had prevented their doing anything at present. They were in hopes in the course of the next year to be able to make trials in that quarter. The lead ore raised and sold had realised a price rather exceeding 10s. per ton, and the calamine sold had fetched about 3s. per ton. Those ores had been sold in a rather unfinished state, as they were only able to make a hand selection, and they had no means of properly reducing the ores, and consequently, there was a considerable accumulation of stuff, which when means could be provided for dressing would return a profit. The report was then adopted.

On the motion of the CHAIRMAN, seconded by Mr. LEAVER, the retiring directors were re-elected.

On the motion of the CHAIRMAN, seconded by Mr. LEAVER, the auditors were re-appointed.

A vote of thanks to the Chairman and directors closed the proceedings.

HORNACHOS SILVER-LEAD MINING COMPANY.

The second annual general meeting of shareholders was held at the London Tavern, on Tuesday.

The Hon. A. G. J. PONSONBY in the chair.

Mr. W. BATTYE (secretary) read the notice convening the meeting.

The report of the directors stated that since the issue of the last report the works have made sufficient progress to allow the manager to raise, dress, and ship 106 tons 12 cwt. 1 qr. 17 lbs. of ore, which have realised £3777. This must not be taken as an indication of the capacity of the mines for yielding ore, but is merely an evidence of the quality of the produce, which fully confirms the statement contained in the prospectus. It has been necessary to expend the amounts realised from the sales of ore upon the development of the mines, greater delay than was expected in the completion of the shaft, and the necessity of enlarging and lining with masonry the main shaft of both the mines. The directors are satisfied that this extra expenditure has been judicious, and will be found of great advantage in the economical working of the mines in the future, and are satisfied that the time has come for the consideration of the important question of the erection of further machinery at both mines, considerable difficulty being now felt in dealing profitably with the quantities of ore raised, while the levels now being driven bring further large supplies into sight. For this an additional amount of capital will be required. Preliminary estimates for the machinery, buildings, &c., have been obtained. The directors are of opinion that it will be necessary to raise £10,000 for that purpose, and propose to ask for the necessary powers to raise this sum. The directors express their conviction of the value of the company's property, and their entire confidence in Sor. Don Rafael Homedes, the resident engineer-in-chief.

The report of the engineer-in-chief upon the Descuidada Mine stated that in completing the works indicated the second-floor back will be opened on Jan. 1, 1876, and will be immediately capable of stowing under the most favourable conditions. The preparatory works at that date will be sufficiently advanced for the third-floor back to be opened before the ground of the second floor is all worked away. The mine, therefore, will have attained a position which will ensure regular progress in the works, and they will be able to stope and return one floor per year. From the commencement of next year they will be ready to make returns of ore from the second-floor back, which can be all stowed away in the course of the same year. In his report of Dec. 10, 1873, he calculated that they would have at Descuidada a mineralised run of 100,000 tons long. The result of the works made up to this date confirm the exactness of this estimate. They have, besides this, great probabilities of finding a second course of ore south of the engine-shaft. He has already stated, in speaking of the mineralisation of the lode, that he expected that the approximate production per square metre of lode will be 600 kilos, but, to prevent disappointment, he would suppose in his calculations that the square metre will only produce 400 kilos. The stoping, therefore, of the second floor will give 60 metres x 20 metres = 1200 square metres of lode, and calculating on a mineralisation of 400 kilos, they will have 1800 square metres x 400 kilos = 720 tons of mineral produced by each floor. The San Francisco lode, situated to the south-east of Descuidada lode, has likewise been worked by the ancients for a length of about 30 metres. Judging by the burrows on surface, the depth of the old workings will vary from 15 to 20 metres. The San Francisco is a fissure lode in a quartzose stratum, identical with that of the Descuidada. The direction and the dip of both lodes are essentially the same. He thinks, from all these points of analogy, it is natural to conclude that the mineral of the two lodes will be also alike. He proposes to sink an underlay trial shaft on this lode, and if it turns out to be mineralised, to sink forward the work so as to make returns simultaneously with Descuidada. Between this lode and the Descuidada lode there exists, besides, a third parallel lode which must be explored so soon as the works of the San Francisco lode furnish some indications for guidance, with the probable result that in a short time these two lodes may augment still further the very great importance of the Descuidada lode. These three lodes can be connected on surface by a small tram-road, and the mineral preparation and dressing of the mineral can, and should, be made by the Descuidada machinery.

Referring to Afortunada, the engineer-in-chief reports that its mineralisation presents itself in rather irregular columns, and it would be hazardous to fix the yield per square metre of mineral; but he is thoroughly convinced that the production per square metre will exceed in a marked degree the quantity fixed in his report of Dec. 10, 1873. He is also confident that the proportion of rich ground, which he estimates at one-fourth as against three-fourths of barren ground, will be exceeded, and that they will probably have one-third of the lode mineralised, and only two-thirds barren. If, for the reasons explained, he does not fix the probable number of kilograms to be produced by each square metre of lode, he must repeat that he has the greatest confidence that the production will be very important and of great value. In his report of Dec. 10, 1873, he expressed an opinion that the Afortunada Mine had great probabilities of becoming an affair of unusual magnitude. The works carried out at this mine since then, the extraordinary richness of the mineral, and the recent discovery of a new lode, confirm his day after day more and more in his first opinion, and he has every reason to believe that the hopes then held are about to become an accomplished fact.

In examining an irregularity of the Afortunada lode he recently discovered a new lode in the first level north of shaft. He immediately commenced to drive a trial level to satisfy himself as to the reality of this discovery. They have driven at this date three metres of level on the new lode, which is 1 metre wide, and carries a lode on both walls. It is at present worth 150 kilos per square metre of mineral lode is more ancient than the Afortunada lode, which crosses it and throws it out of its regular course, producing a heave of six metres. He cannot answer the important question whether the new lode will produce mineral in paying quantities before the works throw some light on this point to enable him to form an opinion. They will be able to extract the mineral from the three lodes by the engine-shaft, and not have a single metre of cross-cut to drive for the purposes of communication from one lode to the other.

He congratulates the company on the present state of its affairs. They can from this moment consider the future of the mines assured. They can rely upon large profits, and upon a future capable of surpassing even all present expectations.

The CHAIRMAN said he had simply to move that the report and accounts be received and adopted. He did not intend to detain the meeting long, because no doubt many gentlemen present would be glad to ask questions, to which he should be happy to give the fullest replies. There were, therefore, only a few points to which he would call their attention. Perhaps the most important point was the reason why the directors now came before the shareholders and asked for power to raise additional capital. As the shareholders had been informed from time to time in the reports, and also in the report from Mr. Paristot, the directors had been expending large sums in the development of the Descuidada and Afortunada Mines. A great deal of work had to be done there. There was a great expenditure in masonry, and upon other matters connected with the shaft, which was not originally contemplated or allowed for, and from this cause, and from other circumstances, the directors had not the capital to carry on at the present moment the erection of new machinery, which would be necessary to develop the mines. The work which had been done had brought large quantities of ore into sight, and that ore would have to be dressed as economically as possible, and brought over to this country, but the principal draw-

back to this was the want of proper and effective machinery. As the shareholders would have seen by the report, Mr. Paristot had been recently at the mine, and was of opinion that the machinery must be erected if the shareholders wished to pay a dividend. The question was, whether the shareholders would raise the money, erect the machinery, and then enable larger returns of ore to be made, or whether they would go on as they had been going on in the past year, that was to say that as they received money from Spain they sent it back again to work and develop the mine? The directors strongly advised the shareholders to raise the money at a fixed rate of interest; there was nothing in the mine itself which could lead to the slightest doubt that the money could be raised, or that the mine would pay a fair and proper dividend. As regarded any question about the mine, Mr. Paristot, who had just returned from visiting the property, would give the fullest explanations to any shareholder who might require them, and if there were any other questions to be asked he himself should be happy to answer them to the best of his ability. He moved the reception and adoption of the report and balance-sheet.

Mr. J. RUSSELL FREWER seconded the resolution.

Mr. GLYNDON thought it was a matter of regret that the concern should have to commence borrowing money. The gentlemen who had the management should have looked seriously into matters before they spent all the capital. A great many expenses had been incurred which, in his opinion, might have been avoided. For instance, he thought the directors might have left in abeyance until the mine was paying dividends their remuneration of 2000l., which would have been useful to carry on the mine. There seemed to be but a very small amount in the banker's hands, and he supposed the mine was now at a standstill.

The CHAIRMAN: By no means; we receive ore from Spain, and send money back. As regards the directors' remuneration, I may mention that we have received no remuneration for the past six months.

Mr. SANDEMAN agreed with the observation which Mr. Glyndon had made regarding the fees. There was a large meeting of shareholders at Glasgow recently, at which Mr. Paristot attended. He believed no alteration could be made in the fees of the directors at this meeting, as the notice required by the Articles of Association had not been given, but his own opinion, and the opinion of many Glasgow shareholders, was that the fees of the directors should be abolished until 10 per cent. was paid to the shareholders, when the directors' remuneration should be at the rate of 5 per cent. upon the surplus; or he was willing to have 500l. placed to the credit of the directors, to be paid when a dividend was paid to the shareholders. He believed the directors were willing to meet the shareholders on that point. He hoped the shareholders would support the suggestion which he had made. He thought it hard that the London expenses should amount to 2611l. for bringing to market ore which realised 3777l. He could not help thinking those London expenses were rather high. He believed that if the company were managed in Glasgow there would be better results. The rock upon which so many limited liability companies had struck was having a large expenditure with very small returns. When the returns were small the expenses should be kept down. He hoped the shareholders would agree to what he believed the directors were willing to accept—that 500l. should be placed to their credit, but that no portion should be paid until a dividend was paid to the shareholders.

Mr. W. GLYNDON thought that two or three of the items, such as interest, commissions, discounts, and brokerage, and loss on exchange, &c., should be given more in detail. He also asked for an explanation of the item of 420l. for travelling expenses.

Mr. EVANS, the auditor, replying to the first part of the question, said that the items were given in full in the ledger, but for convenience they were lumped together in the balance-sheet. In future accounts it would be easy to give some of the items rather more in detail.

The CHAIRMAN said that the travelling expenses were in connection with Mr. Paristot's visits to the mine, which had been of great service to the company.

Mr. HALES: I think Mr. Paristot's expenses have been well laid out.

Mr. J. RUSSELL FREWER said he wished to reply to the remark that had been made by Mr. Sandeman that 2611l. had been expended in bringing to market 3777l. worth of ore. Now, nothing could be more fallacious than such an attempt on the part of Mr. Sandeman to bring that before the shareholders as a true statement. As a matter of fact only a very small portion of that sum had been necessary to be expended to bring that small quantity of ore to market; it had been expended in many other important items which had a bearing not upon this small quantity of ore which had been sent home, but upon the large quantity of ore in sight, which was ready to be raised and turned into money. (Cheers.) He believed this to be the most critical stage in the affairs of the company since its commencement, the mine now offered such a good prospect of success that what was required was not that there should be petty bickerings about the small items which had been challenged, but that there should be a unanimous agreement and understanding between the directors and the shareholders. Nothing beyond that was necessary to make the company a great success. One reason why the directors did not on the present occasion come before the shareholder with a small dividend was this. Mr. Homedes, the resident engineer-in-chief, was a gentleman who would do everything he undertook in a business-like and systematic manner; the directors had said to him, "Send home ore, that we may show the shareholders we have something," but Mr. Homedes had replied that he must lay out the mine in a miner-like manner according to his experience gained from many years of mining labour, and there could be no doubt whatever that the shareholders would be standing in their own light if they asked Mr. Homedes to pick out the eyes of the mine, in order that a good balance-sheet might be put before the shareholders. Mr. Homedes had told the shareholders the mode in which he intended to go to work, and that nothing the directors had said, would move Mr. Homedes. He had said to the directors, "I have said to you, but he would come before the shareholders on the present occasion with a small dividend of 5 per cent., but he was convinced Mr. Homedes was right in his plans. He asked the shareholders to bear with the directors for another year, and if in the course of the year they did not show a better balance-sheet, the shareholders could then turn out the present board, and put someone in their places who could earn the money. It would be desirable to divide the report into two parts. As regarded the directors' fees the directors were charged with receiving 2000l. a year, but he would ask Mr. Hales to find that amount? There was 15000l. charged, of which the directors had returned 5000l., leaving 10000l. More than that, he might mention that the directors had put their hands in their own pockets and lent the company 2000l. or 3000l. The directors had done that willingly, but they must have the confidence of the shareholders if they were to carry the mines to a successful issue. (Hear, hear.) He also called attention to the fact that the balance-sheet was not simply for the past year, but embraced the period from the commencement of the company.

Mr. HALES said he had not noticed that fact; if he had known that the directors had only received 10000l. he would not have made a single remark.

The resolution for the adoption of the report and accounts was put, and carried.

On the motion of Mr. HALES, seconded by Mr. MARTIN, Mr. J. Russell-Frewer was re-elected a director of the company.

On the motion of Mr. HALES, seconded by Mr. SANDEMAN, Mr. H. Gielgud was re-elected a director of the company.

Mr. SANDEMAN said he was directed by Mr. Smith, of Glasgow, to say that he (Mr. Smith) was willing to come upon the board, and would take nothing for his services except the expense of coming to and going from London.

Mr. HOWITT said he was instructed to say that Mr. Barker, of Bradford, would come upon the board.

The CHAIRMAN: There is a difficulty in doing this, as notice has not been given. We have had this matter under consideration; we have the power to elect two directors, and we shall have extreme pleasure in electing those two gentlemen to the vacant seats.

Mr. HALES thought it was a mistake to have new directors, and he hoped the meeting would object to any addition to the board for the present year.

Mr. J. E. TAYLOR said there were other points to be considered. When a person proposed to come upon the board without remuneration it was very objectionable; there ought not to be a board of directors of one kind and another. Such a state of things might give rise to variance at the board. There was another matter which was open to objection; he did not see very clearly, because a certain number of shares were held in the City of London, or who had had more at heart the interests of the company. No doubt, as Mr. Frewer had said, this was a critical time in the history of the company, and it was a pity to put a fresh element on the board, and disturb its proceedings. The present board knew perfectly well what they were doing; they had had the management of affairs from the commencement, and he was sure they studied in every way to keep down the expenses. 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mind, so they heard from their agents, that there were many hundred tons at the 10 fm. level which would pay for stamping; they knew that tin had been discovered at the 40 fm. level, and that they had also the prospect of a good lode from the discovery made at the 70 fm. level, and they hear from their agents that the prospects were very encouraging. They did not want any large amount of tin to make the company successful, as they were led to believe that if they could only raise from 6 to 7 tons per month the mine would not only be working at a loss, but that a profit would most certainly be left; they were already able to return 2 tons, and when the proposed stamps were erected, Captain S. Harris told them the monthly raisings would be increased to 4 tons, and if they could only get another two or three tons from the other levels they would again be working at a small profit. Without being too sanguine it really looked as if they were again on the eve of success. He could recollect the time when they were in somewhat a similar position at Wheal Metal: they there came upon tin very much in the same way as now. The returns began with 4 tons of tin per month; these were gradually increased to 10 and 15 tons, until at last they reach 70 per month, and the company was then able to pay very large dividends, in 14 years amounting to something like the sum of 90,000. At the present moment they were in a much better position than then, as instead of working at an enormous cost, the expenditure would probably not exceed 3000. per month. Unfortunately mining, like other things, or, perhaps, more than other pursuits, required three constituents—time, patience, and money; and the time had now arrived when it was necessary to make a call. He believed they had not made a call for 18 months, but one must be made to-day in order to provide the necessary means to carry on the mines for the next three months, to liquidate the merchants' bills, and also to purchase the necessary stamps and portable engine for driving them, the cost of which would not exceed 3000. to 4000. As to the relinquished shares, as they were aware, they had about 1217, and enquiries had already been made at the office whether those shares were for sale. If this lode in the bottom of the mine should continue to improve these relinquished shares would become a very valuable asset, and three courses were open for adoption—either to sell them for the benefit of the company; to absorb them and thus reduce the number of shares; or, perhaps, the more preferable plan would be, when the holders of these shares were paid off, which would be in July, 1876, advantageous to offer those shares to the present shareholders; at all events the committee would not do anything with those shares without first consulting the shareholders. He had mentioned this fact unless some people might think there were a certain number of shares hanging over the market with which they could do as they pleased.

A SHAREHOLDER asked when the 688, due upon the relinquished shares was likely to be paid. The CHAIRMAN said it was due from the company to the holders of the relinquished shares. He would leave the shareholders to judge whether those 1217 shares would not realise a great deal more than 11s. per share; if so, it was quite clear that these relinquished shares would result in a profit to the company.

The accounts were passed and allowed. The CHAIRMAN said he was sorry to have to put this resolution, but they could not do without it. The committee found they must make a call of 7s. 6d. per share. The resolution was put, and carried unanimously.

Mr. WALKER proposed the re-election of the committee of management, including Mr. A. C. Rawlinson, in the room of Mr. A. L. Rawlinson, deceased, and that they be voted the usual remuneration.

The resolution, being duly seconded, was put, and carried unanimously. The CHAIRMAN said the shareholders liked to have a professional auditor, although the accounts were kept in a most efficient manner, and the services of an auditor were really unnecessary. Mr. W. Morris was re-appointed auditor.

A SHAREHOLDER had much pleasure in proposing that the best thanks of the shareholders should be given to the Chairman for the clear and lucid way he had explained the position and prospects of the mine; and also to the committee for their continued attention to the company's interests. Another SHAREHOLDER seconded the proposition, which was put, and carried unanimously.

The CHAIRMAN, having on behalf of the committee and himself, thanked the meeting for this renewed mark of confidence, said he hoped the next time they met there would be something good to communicate.

The meeting then separated.

BLUE HILLS TIN MINING COMPANY.

A general meeting of shareholders was held at the offices, Austin-friars, on Tuesday.—Mr. CHESTER CHESTON in the chair.

Mr. HICKEY (the secretary) read the notice convening the meeting, and the minutes of the last were confirmed.

Accounts were submitted made up to Aug. 7, showing a loss on the quarter of 1700., and a debit balance of 9200.

The report of the agents was read, as follows:—

Sept. 25.—During the early part of the 12 weeks just expired the tinwork operations were principally confined to further opening out the south part of the Pink lode, in the 60, at the bottom of the Poulgar shaft, where some payable tin-bearing ground has been found, and which is now being worked on that principle; this being completed, the men were removed to the 50 east end, on the main part of the lode. As there is scarcely anything done on this lode east of this point we consider it one of the most promising speculative points (except the sinking of the engine-shaft 20 fathoms deeper) in the mine, the present end being close by a cross-course and gossan; the lode is probably larger than usual—being 8 to 10 feet wide—and somewhat hard for driving on, yet it is producing low quality tinstuff throughout, with occasional good stones of tin. With a view to greater progress in this end it is now being driven in the kilaas under the lode, and after a few fathoms driving the lode can be cut into, and if found more productive the end can be resumed on the lode. The tribute pitches are much the same as for some little time past as to produce, and should the price of tin further move up a few pence per ton, so as to be enabled to increase the standards to the tributers, an increase in the tribute department would soon manifest itself.—S. BENNETT, A. GRIPE.

The CHAIRMAN said the accounts showed that the debit balance amounted to 9200., but as the loss upon the past quarter's operations had been so small, and there were good prospects that the price of tin would improve, the committee did not consider it necessary to make a call upon the present occasion. The mine generally was looking well, and the lode in the 50 presented the most promising appearance.

Mr. HICKEY referred to various items in the accounts, and stated that the accounts had been made up to August 7. He need hardly point out that the loss had arisen to no small extent from the altered price of tin, which, during that quarter, had been sold at a lower price than during the past nine years. The opinion generally entertained in the best informed quarters was there would now be a sustained improvement in the value of that metal.

The accounts were passed and allowed, and with the report was ordered to be entered on the minutes.

A vote of thanks was passed to the Chairman.

PENHALLS TIN MINING COMPANY.

A general meeting of shareholders was held at the offices, Austin-friars, on Tuesday.—Mr. CHESTER CHESTON in the chair.

Mr. HICKEY (the secretary) read the notice convening the meeting, and the minutes of the last were confirmed. The accounts showed a profit on the quarters' working of 1360., and a credit balance of 6300. The report of the agents was read, as follows:—

Sept. 25.—During the 12 weeks which have just elapsed there has been no new feature worthy of notice in the 70 east end of engine-shaft. The lode on which we are driving has continued small, and not of much value. In the 60 east the lode has varied from 8 to 10 ft. per fathom, and at present is worth about 7. per fathom. In the cross cut at this level no further lode has been met with, while in the 50 cross-cut, north on the same cross-course, the western part of the lode, noticed in our last report, has been laid open, and found worth 5. to 6. per fathom. The north lode, which is the object of our search in this direction, is still some fathoms ahead of the present end. The 50 west end contains a large lode, still hard, and worth 10. to 12. per fathom. The 40 west is worth 7. per fathom and a vein below this level 10. per fathom; this is on another and a southern section of the lode to that now being opened out in the 50. The 40, east of Shop shaft, is worth 7. per fathom. The various stopes throughout the mine are on the average producing just about the same quantity of tin as they were at the last general meeting, but they have not proved so valuable as in the previous quarter, on account of the price realised for the produce being several pounds less per ton than during that period. However, at this moment the price has again realised some 5. per ton from the lowest point reached, and now stands at about the same price it did three months since, with apparently a much firmer market, so that our hopes are again in the ascendant; and as the quarter would have increased the usual quantities of tin, a return to better prices will also be to that of more profits.—S. BENNETT, W. HIGGINS.

The CHAIRMAN said that since the last meeting they had secured the addition of the fore-shore grant, by which they would be able to bring up the level in that direction, which was a point of some importance. The mine, on the whole, was looking quite equal to what it had done for some time past, and with an improvement in the price of tin it would soon resume the payment of dividends.

Mr. HICKEY said it would be seen from the accounts that the returns had been quite equal to those of the previous quarter; the price realised, however, had been quite low for about nine years; during the first part of the quarter the price realised was only 47., but the last parcel sold fetched 52. 12s. 6d., a difference of 5. 12s. 6d. per ton. This upon the quarter would have increased the profit by 3000.

The CHAIRMAN had observed that the smelters were paying for tin 4. per ton above the standard price, so that they might look for a rise.

Mr. BROOKLYN asked if the machinery, boilers, &c., were in an effective condition?

Mr. HICKEY said that the machinery generally was in a thoroughly effective working condition.

Upon the proposition of Mr. BROOKLYN, seconded by Mr. CLARKE, the accounts were passed and allowed, and with the report were ordered to be entered on the minutes.

The CHAIRMAN, referring to the finances, said that the decline in the price of tin had reduced the profits of the quarter by 3000. At the last meeting the accounts showed a credit balance of 11300., and upon the recommendation of the committee a dividend was declared of 2s. per share, which reduced the credit balance to 6300. Upon this occasion the committee did not recommend the declaration of a dividend, but that the balance standing to the credit of the account should be carried forward. The committee of management were re-elected.

A vote of thanks to the Chairman closed the proceedings.

MEDLYN MOOR MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Gresham Buildings, on Thursday.

Mr. EDWARD HILTON in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting, and the minutes of the last were read and confirmed. The accounts for 16 weeks, ending August 7, showing a debit balance of 3550. 14s. 2d., were received and allowed.

The SECRETARY read the report of the agents (Capt. James Rowe), also the report of a special inspection made by Capt. Joseph Prisk, of the Great Wheal Lowell and The Lovell Mines, both of which were considered by the shareholders present as eminently satisfactory. He also (in the absence of the manager through ill health) gave some interesting particulars of the amount of work done at the mine since Jan. 1 last, to the great satisfaction of the shareholders. He said that the future expenses would be confined to making the necessary explorations of the mine.

After some further conversation, the CHAIRMAN moved that Captain Prisk's report, as well as that of Capt. Rowe (the manager) be received, and, together with the statement of accounts, be printed and circulated amongst the shareholders. A SHAREHOLDER having seconded the motion, it was put to the meeting, and carried unanimously.

A call of 4s. 6d. was made in order to liquidate the debit balance, and to carry on the operations until the next meeting.

The meeting was then made special pursuant to notice, when a resolution for forfeiting all shares in arrears of calls made prior to May 19 was passed. A cordial vote of thanks to the Chairman closed the proceedings.

The reports of Capt. Rowe and Prisk will be found in another column.

THE WELSH FREEHOLD COAL AND IRON COMPANY.

An extraordinary general meeting of shareholders was held at the London Tavern, on Tuesday, for the purpose of confirming the following resolution:—"That the company be wound-up voluntarily."

Mr. W. P. BELLIS (the secretary) read the notice convening the meeting.

The CHAIRMAN proposed that the resolution passed on Sept. 14 be confirmed.—Mr. BULL seconded the proposition.

Mr. GREIG had hoped there would have been some opportunity of communicating with Mr. Bain, and that a committee would have been appointed to confer with him, but he had not been able to do so. Mr. Bain had written to Mr. Greig asking him to postpone the sale of the colliery, but Mr. Bain had replied to the effect that he would be glad to fix a meeting with the committee, but it was for the committee to form a new company upon a solid basis, and suggested that the vendors' shares should be dropped entirely, otherwise it would not be satisfactory to anyone. Mr. Bain considered it would be most unwise to postpone the sale, as the storm had already done great damage to the railway. Mr. Bain would be as ready to treat with the committee after the sale as before, but they must not trust that the property would fall into his hands. At last Mr. Bain consented to postpone the sale, so as to preserve the property to all those interested in it.

The CHAIRMAN said the shareholders were much indebted to Mr. Greig, Mr. Stallard, and Mr. Snook for the great trouble they had taken in the matter.

Mr. STALLARD said it was a most unfortunate thing that Mr. Bain had not been in London, and that instead of writing the committee had had an opportunity of conversing with him, as no doubt thereby a much more satisfactory result would have been arrived at in a much shorter time. Unfortunately, Mr. Snook had taken exception to their mode of action, and Mr. Bain, instead of communicating direct with them, had written to Messrs. Stuart. Mr. Bain suggested that the draft of a new company should be prepared, and that the present shares in the new company should not receive dividends until the latter had, in the first instance, received 5 per cent. This Mr. Bain considered would be an inducement for people to take shares in the new company and pay calls upon them. Unless the working capital could be obtained by some such scheme the formation of a new company would be totally impracticable. If the new company be formed upon terms which were reasonable and fair, Mr. Bain was perfectly willing to assist the company, but they could not expect him to accept an indifferent security for a security of first-rate character which he had at present, but if after the sale the company should be carried on upon a reasonable basis, Mr. Bain was willing to continue his mortgage upon the same terms as at present, and he (Mr. Stallard) had not the least doubt Mr. Bain would give better terms, as he had reason to know that Mr. Bain might be induced to take mortgage debentures instead of having the property in actual possession, which he had at the present time. At present they were in the hands of a provisional liquidator, who had no power till his appointment had been confirmed, which could not be done until November. Unfortunately, at the last meeting no resolution was come to appointing a voluntary liquidator; had that been done the appointment could have been confirmed to-day, and by an application to the Court, supported by some of the creditors, terms could have been arranged with the liquidator. Mr. Bain was in favour of a voluntary liquidator.

Mr. SMITH (the solicitor) said the only mode by which a voluntary liquidator could be appointed was under the 114th section of the Act, whereby upon the application to the Court made by any contributor a liquidator or liquidators could be appointed.

Mr. STALLARD suggested that the directors should be requested to convene a special meeting of shareholders for the appointing of a voluntary liquidator.

After some further discussion the resolution for winding up the company voluntarily was carried, and the directors consented to convene a special meeting to appoint a voluntary liquidator.—The proceedings then terminated.

GREAT LAXEY MINING COMPANY.

The reports and accounts to be presented at the annual general meeting on Oct. 13 are decidedly satisfactory, and another good dividend will be declared on the day preceding the meeting.

The two principal matters to be discussed are the fixing of the amount of remuneration to be paid to the directors from October, 1874, and the confirmation or otherwise of the resolution passed at the April meeting giving the directors power to dispose of that portion of the company's sett called Glenroy, upon such terms as they think best. The balance-sheet shows that no less than 55,1300. worth of ore has been sold, whilst the expenditure for mine cost, merchants' bills, royalty, and freight was but 25,560. 3s. 9d. A contribution of 2000. has been given towards the erection of reading-room and workmen's institute at Laxe, an outlay which will be repaid tenfold by elevating the position of the men. The sum of 10,500. was absorbed by the April and July dividends; 4000. has been placed to the reserve fund, and there is at present an available balance of 11,643. 16s. 8d. In addition to this the company have ore in stock to the value of 11,410. 7s. for which no credit is taken, so that the financial condition of the concern is eminently satisfactory.

The report of Capt. John Cornish and F. Reddcliffe upon the operations at the mine is, as usual, a very complete one, detailing the operations in the various levels with much minuteness, and mentioning the prospects in each. All the underground machinery, tramways, levels, and all shafts, &c., are in good repair, and working efficiently and well. At surface the machinery is also in very efficient working order, and going on well. This season has been favourable as to the supply of water, which has enabled them to work off and clear their dressing floors of a large accumulation of very poor stuff, thus giving space for the proper classification of the stuff in dressing, at a much quicker, and, therefore, cheaper rate. They are also gradually reducing the large accumulation of topplings on the dead bank. It will be remembered that they suffered rather seriously from want of water on the dressing floors in 1874 in consequence of the very dry season. This, certainly, in future will never happen to such an extent, however dry the season may be, for they have made a new reservoir in a suitable position to contain the water after passing over the large pumping water-wheel, that formerly ran to waste from Saturday night to Monday morning, which will be a great boon in case of scarcity during the week. They have also made arrangements to use the water over again from the teams or grates at the first washing that was formerly not so utilised. A new Zenner's table or buddle has been erected and put to work, which answers its intended purpose, extracting the very fine particles of ores exceedingly well. They have another of the same sort in an advanced state of completion, which will be set to work shortly. They have prepared proper machines for explosives, according to the Government requirements—one for miners' powder, and another for dynamite store. They think the shareholders may be very fairly congratulated on the success that has resulted in the continued rigorous prosecution of the mine throughout, in all its departments, and its present position for the future. The prospects underground are good on the whole, and the returns for the current six months will be quite equal to the very satisfactory returns of the past six months. In conclusion, they are sorry to report that they have had several serious accidents during the six months, which, while they have not damaged the property, have resulted in loss of life. They are, however, very thankful to be enabled to add that these accidents have arisen from causes quite outside and beyond the control of the management.

ROCK DRILLS.—The invention of Mr. W. ELLIS, of Northcote-road, Wandsworth, relates to machines in which a jumper or drill is carried to and fro, so as to bore rocks or other hard substances by a succession of blows. By an arrangement of the parts actuating the valve or valves the stroke may be lengthened or shortened, and the motive fluid may be made to cushion the piston at the end of each stroke, may be cut off at any part of the stroke, or may be used expansively. The jumper or drill is rotated at each backward stroke by an arrangement which prevents breakage in case of the jumper or drill jamming in a hole. The jumper is automatically fed forward in proportion as the jumper or drill penetrates the rock. The machine is attached to a horizontal bar by an improved universal joint, which allows the machine to be pointed in any direction, and to be readily removed. The hollowed out end of the piston rod is so

arranged as to firmly grip the jumper or drill with out the sides wearing unequally. One form of stand on which the machine may be mounted is arranged so as to be suitable for very uneven ground.

INTERESTING EXPERIMENTS WITH DYNAMITE.

A series of experiments with No. 1 Dynamite have been given in Mr. T. P. Jones's Hailstone Quarries, Rowley, near Dudley; after which the party adjourned to the Lye Cross Pits, lent for the occasion by Mr. E. F. Smith, to witness a number of experiments with No. 2 Dynamite, especially manufactured for blasting mild rocks, coal, &c. The experiments were conducted by Mr. John Shepherd (Dynamite Instructor, in the employ of the British Dynamite Company), under the superintendence of Mr. Thos. Johnson, Midland agent for the company. Amongst the visitors were—Messrs. E. F. Smith, H. Hughes, T. P. Jones, F. N. Worth, Thomas Latham, Geo. Jones, T. Parton, F.G.S., Jas. Ritson, R. Latham, Josh Cole, Alexander Smith (secretary Mining Institute), S. Thompson (Cardiff), and J. M. Fellows.

The experiments commenced by charging a breast-hole in the face of Rowley ragstone, the hole being 4 ft. deep by 1½ in. diameter. As this was a piece of stone tightly keyed in under a large mass, it was necessary to blow it out so as to allow the shot above a better opportunity of getting its burden. The hole being charged with three No. 1 cartridges, the shot was fired, the result being that the block of stone was blown out, the charge taking effect 1 ft. beyond the bottom of the hole. The next hole charged was 7 ft. deep by 1½ in. diameter, on the opposite side to the last shot. The quantity of dynamite used was about ½ lb. This shot got every ounce of stone it was possible to get, and it was a great surprise to the visitors how so small a quantity of dynamite could bring down such a heap of stone, weighing probably 50 tons. It was found this last shot had loosened a mass of stone about 7 or 8 tons the side of it. On examination a crack, about 1½ in. wide, was found between this mass and the quarry. This was brought down by simply inserting a dynamite cartridge in the crack.

The third experiment illustrated the power of dynamite in cracks or natural cleavages in the stone. On ascending the brow of the quarry a crevice in the rugged top of the quarry was soon espied, and in this a small charge of dynamite was inserted, a few handfuls of soil being thrown over it. The charge was fired, when heavy blocks of stone, several tons in weight, came tumbling into the quarry. This experiment showed at once the great saving of time and labour in using dynamite for this purpose, for whilst gunpowder would simply be thrown away on such work, dynamite, without holes, ramming up, or the least assistance, does its work creditably. A hard grey piece of Rowley rag was placed without a hole being bored into it; the contents of a small dynamite cartridge was placed on the centre of this stone, a shovelful of earth out of the stone was then placed over it, the shot was fired, and the whole mass broken into fragments.

This finishing the experiment at the quarry, the party proceeded by brake to the Earl of Dudley's Lye Cross Pits, Oakham, and descended the pit. They were shown through the workings by Mr. Thomas Latham, the manager, to whom great credit is due for the practical manner in which everything connected with this gigantic undertaking is carried on. The visitors were highly struck by the neatness and order of the workings. The coal at this pit is some 10 yards thick, beautifully bright, and as hard as a bell. The workings are well ventilated, and it is proposed shortly to light the gate-roads with gas manufactured down the pit. The stables are clean, roomy, and well ventilated. Fresh spring water is brought down the shaft from 70 yards below the surface, so that the horses have an unlimited supply of water, which must be a great boon to them underground.

Mr. LATHAM having shown the visitors round the workings, the experiment with No. 2 Dynamite began. The first experiment was a roof shot in coal, the hole being 3 ft. deep by 1½ in. diameter. Two small No. 2 dynamite cartridges were placed in the hole, gently rammed home, and fired, the result being the coal was not dropped or blown into slack, but loosened, and when touched with the pick it fell. This experiment told at once that whilst the No. 1 Dynamite, which is much too powerful for the coal, reduces it to slack, the No. 2 gets the coal in more saleable lumps.

The second experiment was blasting a "man of war"—i.e., a pillar of coal standing on the roof. The "man" of coal in this instance was 30 ft. circumference, and over 6 ft. high; it is usual to get this massive lump without blasting. A hole 2 ft. 6 in. by 2 in. diameter, was churned into this mass of coal; it was then charged with ½ lb. of No. 2 Dynamite, the shot fired, and nearly the whole mass removed; only a small portion remained, which was cracked and loosened so much that a touch with a pick would have brought it down. Mr. Latham said it would cost 15s. to have removed this by hand labour, whereas the cost with dynamite was 1s. 8d. Two charges were next fired in a rock heading; these having done good work, the company adjourned to the manager's office down the pit, when

Mr. THOS. JOHNSON read a paper on the "Composition, Utility, and Safety of Dynamite," and in the course of his remarks stated that No. 1 Dynamite is composed of 75 parts by weight of nitroglycerine, and 25 parts by weight of absorbent earth. No. 2 Dynamite is only composed of 18 parts by weight of nitroglycerine, with certain other ingredients to prevent exudation of the nitroglycerine.

No individual evidence can speak so highly in favour of dynamite as does the large scale on which it is being used. Brought out commercially by Nobel as late as 1866, it already commands an annual sale of about 3500 tons, equal to at least 10,500 tons of gunpowder. Yet neither its transit nor its storage has hitherto given any rise to accident. In 1861 the sale was only 11 tons, whereas now it was about 3500, which fact ought to speak volumes as to its safety, utility, and cheapness. Were it not for the very heavy restrictions placed upon the sale of dynamite, there is not the least doubt but that the sale for the past eight years would have been considerably larger. When the new Explosive Act comes into operation, at the beginning of next year, we hope to throw on one side a heavy cask of restrictions that have hitherto been a great stumbling block in our road. He contended that dynamite ought to be as easily obtained in a town as gunpowder, seeing it is far safer, whereas now a license has to be obtained from the Home Office before it can be stored or used, thereby preventing its coming into general use by individuals, as would otherwise be the case if it could be easily obtained. Major Majendie, Majesty's Inspector of Gunpowder and Dynamite Factories, states in his evidence given before the House of Commons Select Committee on Explosive Substances—Parliamentary Session of 1874—that the law relating to dynamite is as much too stringent as the gunpowder law is lax, and that the time has come for relieving safe nitroglycerine preparations from such unnecessary restrictions as the Nitroglycerine Act imposes upon them. His Grace the Duke of Sutherland gave evidence, and said:—"I think that dynamite is safer in every respect than gunpowder, the carriage of it is so much safer, and the ease with which the men handle it was not it a much safer material to carry about than gunpowder. I may also mention with regard to blowing up of tree roots, we found that we could do for 7d., by putting three or four cartridges underneath the root, what it would cost us 6s. to do in tearing the root out by engine power and manual labour." During the past year 3500 tons of dynamite were manufactured, which is equal to a moderate computation, to 10,500 tons of blasting powder, and more than half the whole consumption of the whole continent of Europe. The 12,000 tons of dynamite then produced had been conveyed by carts and railways over a collective distance of 333,250 English miles; of this about two-thirds was conveyed by rail, and one-third by carting, and although much of it was subjected to very rough usage, no accident has ever occurred. This dynamite was sent through Prussia, Austria, Belgium, Italy, Spain, Portugal, Silesia, Poland, Bavaria, Switzerland, Sweden, Norway, and Denmark. There are now 14 dynamite factories in various parts of the world, and since the opening of the first factory in 1866 not a single accident has ever taken place with dynamite, either during carriage or storage. It is, therefore, indisputably proved, not only by the evidence of some of the first scientists in England, but also by the test of much actual practical experience, that dynamite is safer, and may be carried by rail, ship, or cart without the risk of ordinary gunpowder. In conclusion, Mr. Johnson hoped that the company had seen sufficient that afternoon to come to a conclusion as to the value of dynamite.

CORNISH MINE SHARE MARKET.—Since last week prices of shares have further advanced, owing to a rise of 2d. on the tin standards. The following are the closing prices:—Carn Brea advanced from 59 to 63, 65, declined to 60, and does 62. Cook's Kitchen has been largely dealt in, fluctuating between 8½ and 9½, closing at 8½ to 9. Dolcoath advanced to 40 to 42½, buyers, and close 41½ to 42½. East Pool has remained steady at 15½ to 15½. East Lovell quiet, 7½ to 8½. Providence nothing doing, called 3 to 4. Rosewell Hill rather more dealt in at 6s. to 8s. South Carn Brea quiet, and but small business done in them; price 36s. to 38s. South Condor firm, 6½ to 7½. South Crofty on a rumoured improvement in the shaft, are firmer, 28 to 28. South Francis called 4 to 6. Tinroft advanced to 28, buyers, declined to 26, sellers, and close 26½ to 27½. In West Basset a few shares changed hands at 6½ to 7½. West Francis unaltered, 4½ to 5½. West Gossan lower, 55 to 60. West Tolvus quiet, 10 to 11. West Tolvus, 4½ to 4½. Kitty (St. Agnes), 3 to 3½. Wheel Wy, 3½ to 3½. Killifreth, called, 25s. to 30s. Unity Wood, 12s. 6d. to 15s. Wheel Owles, 150 to 170.

SOUTH PHOENIX MINE, Llaninhorne, was recently sold by Mr. Clyma as a going concern to Mr. C. Pearson for 10500.

THE BORING MACHINE, introduced by Mr. M. Loam, will be set to work at Dolcoath, we understand, in a few days. We need scarcely say that we wish it every success.

SOUTH CROFTY shares keep firm at 25 to 26. We hear there is a probability of the junction of the two south lodes in the mine being at last seen, as there is a marked improvement in the bottom of Bickford's shaft.

LEVANT.—The rich Cargodna lode, which for a short time declined somewhat, is now said to be as good as ever. Saturday was pay-day, and we are glad to find that they have this month raised 15 tons of tin and over 2000. worth of copper, which will quite pay the month's cost.

WEST FOLDING is still opening out well, shares having advanced to 19, 20. In a West Fold, in the 32, about 5 fms. west of shaft, they have a fine discovery for tin, worth from 75s. to 100s. per fathom, which can be taken away for 2s. in 1½. The discovery in so shallow a level, where the expense of working is, comparatively speaking, so slight is of considerable importance.

MR. BASSETT'S PRIZES.—We are informed that there will be at least two competitors for the Basset prize for the best boring machine. We trust that Mr. Basset's efforts will be crowned with success, both as to the boring machine and in arousing the attention of engineers and others to the duty of the engine. The prize cannot be a doubt that some decided change is necessary, both in the way of inspection and otherwise.

MINING IN THE LELANT DISTRICT.—In consequence of the differences which have occurred among the executive of Wheal Mary, Wheal Kitty, and Wheal Margaret mines, they have not been, and are not now, in full work, and some distress exists among the miners who were employed in consequence. The lords are desirous of seeing matters brought to a satisfactory settlement, and, will, it is said, resort to strong measures, if necessary, to effect this.—West Briton.

GREAT WHEAL VOR UNITED MINES.—The detailed accounts issued from this mine by the energetic secretary (Mr. J. J. Turan) have for many years been considered to be superior to any other mining accounts in the county for general information. If many other mining pursers and secretaries issued similar accounts it would be the means of elevating mining, and giving confidence to shareholders, especially to those non resident.—Western Mining News.

Mining Correspondence.

BRITISH MINES.

BEDFORD CONSOLS.—G. Rowe, Sept. 28: The lode in the winze sinking below the 57 ft. level for the width carried, 6 feet, continues to maintain a strong kindly appearance, and yielding good stones of rich quality copper ore. The lode in the stope in back of the shallow adit level, so far as taken down, will yield 5 tons of good mundie per fathom.

BEDFORD UNITED.—William Phillips, Sept. 30: The lode in the back of the 115 ft. level, just west of the shaft, is still looking very fine, at present worth over 500. per fathom. All other parts of the mine continue to look much the same as for some time past. A full report will be given next week.

BOG.—W. T. Harris, J. Barkell, Sept. 29: The mine throughout is presenting much the same appearance as we reported last week. We are making very favourable progress in sinking the engine shaft in the 75, where the lode is full 6 ft. wide, and producing lead and blende in small quantities. All the machinery is in good working order.

BRONFLOYD.—J. Davis, Sept. 30: Setting Report for October: Nine men to sink No. 3 shaft from the 95, as per contract already reported. The shaft is down to-day 11 fms. below the 95, and by the end of next month I expect it will be down the required depth. To stop the No. 1 stope at the back of the 95 west, to 12 men, at 800. per cubic fathom. No. 2 ditto, to 12 men, at the same price. The average value of these stopes is about 240. per cubic fathom. To stop above the new arch at the 73 fathom level, to eight men, by day work. This is, I consider, rather a troublesome piece of ground to work, but I have no doubt, contains good bunches of ore. To drive the 73 east, by four men, at 80. per fathom; no change here. Four men to rise from the back of the 73 stopes west to the 60, at 70. per fathom. Some three or four years ago the floor of the 60 gave way, and since then we have had no access to the western end of this level. The object of this rise is to enable us to get at some ore ground still standing at the 60. The tramming and filling to four men, by the day. The six men belonging to the middle lode are employed preparing main adit and No. 2 shaft for drawing. The excavations for this work are nearly completed, and we have rails, timber, and all other materials, except wire-rope, already on the spot to complete this job. I estimate our sales of ore for the next month at 30 tons.

CATHEDRAL.—Joseph Mitchell, Sept. 30: We are fast getting through the hard bar of ground that has so much impeded our progress in sinking the shaft for some time past. On the appearance of the lode at the 80, the six men daily strengthened in my opinion that a great course of copper ore will be shortly met with; the lode is 3 ft. wide, producing grey, black, and crystallised copper ore. In the 30 end west the lode is 2½ ft. wide, composed of gossan and grey and yellow copper ore, with what the miners here call a nice sugary spar. The 30 end east is composed of gossan, quartz, and copper ore; and in the next level (the 40), under adit, about 60 fms. from surface, we are safe for a rich course of copper. All other points looking as usual, and the machinery in excellent working order. Our next sale of ore will be ready for the next month at 30 tons.

CHRYSEY AND WHEEL ABRAHAM UNITED.—W. Thomas, J. Hammill, Sept. 29: Sturt's Engine Shaft: In the 228, driving west, the lode is 2½ ft. wide, yielding 1 ton of copper ore per fathom; we anticipate an improvement in this end shortly as we approach the ore ground gone down in the bottom of the 215.—St. George's Shaft: In the 215, driving west, the lode is 3 ft. wide, and will yield 3 tons of copper ore per fathom; the lode in this end has very much improved since last advised. In the 215, driving east on the south lode, and west of shaft, the lode is 1½ ft. wide, yielding a little copper ore.—Wool's Shaft: In sinking this shaft below the 220 the lode is 5 ft. wide, yielding some good copper ore. In the 220, driving east, the lode is 4½ ft. wide, and will yield 4 tons of copper ore per fathom.—Blewitt's Shaft: In the 234, driving west, the lode is 3 ft. wide, yielding a little copper ore.—Richards's Shaft: In the 223, driving west, the lode is 6 ft. wide, yielding 1 ton of copper ore per fathom; the lode in this end has a better appearance. In the 210, driving west, the lode is 3½ ft. wide, yielding 1 ton of copper ore per fathom. In the 200, driving west, the lode is 1½ ft. wide, composed of peach and spar. The winze sinking below the 200 the lode is 4 ft. wide, yielding copper ore to dress.

CWM DWYFOR (Copper and Silver-Lead).—J. Jewell, Sept. 30: South Cross-Cut: The No. 4 lode east is 20 in. wide, yielding 1 ton of silver-lead ore per fathom; price for driving, 160. per fathom. I am hoping we shall make a communication with this level and the shaft sunk in the open cutting against next setting day, when stopping will be commenced. We are hauling to surface to-day a beautiful pile of lead ore from this level.—North Cross-cut: The No. 4 lode east is still all the size of the level, and will yield about 5 cwt. of silver-lead ore and stones of copper ore per fathom; price for driving 180. per f. In sinking the old men's shaft on No. 4 lode north better progress is being made, and all the stuff will go on the dressing-floors to be dressed over. The building of the winding-drum house is almost completed; we shall have some part of next week be ready to fix the same. The masons are busily engaged building the crusher-house. The machinery, both winding and pumping, is working well.

CWM ELA (New).—Wm. Goldworthy, Sept. 25: The 30, left of shaft, is not looking so well as last week, a vugh has come across the end, and temporarily divided the lode, which is large, and letting out a great quantity of water. In the 30 end, east of shaft, the lode is producing a little lead and blende ore, but not to value. The 20, west of shaft, has been stopped the week. The stope at the back of this level will produce 18 cwt. of lead and blende ore per fathom. The stope in back of the 20, east of shaft, and west of cross-course, will produce 15 cwt. of lead ore per fathom. The stope in back of same level, east of cross-course, is worth 20 cwt. of lead ore per fathom. The stope in the 20, east of shaft, will produce 12 cwt. of lead and blende ore per fathom. We have had heavy rain this week, and our machinery is going on with full speed.

DE BROKE.—T. Hodge and Son, Sept. 28: Since our last the shaftmen have put in penthouse in Wilson's shaft at the 25, and completed the catches, and the sweep of flat-rods are ready to connect at surface. We are now preparing to send down the main-rods and to drop the lift in the bottom of the shaft. During the past week the weather, which has been very dry, has rather impeded our progress. In the 25 north-west the end is all in lodestuff, composed of siliceous lime spar, and gossan, but poor for lead. We have another 2 or 3 fathoms to drive to reach the ore part, and judging from the lode in Daniel's winze we expect to find it productive. The stope in the 25, west of the junction, is not looking so well; the lead is disseminated throughout a large lode, worth at present 100. per fathom; it will undoubtedly improve again as we go up. The stope, east of trial winze, in bottom of the adit, is worth 160. per fathom. In Daniel's winze, below the adit, there is a nice bar of ore in the western part. The lode in the 45 east, the lode is a good course of ore, worth 10 tons or 400. per fathom. In Dymond's winze sinking below the 145 east, the lode continues a fine course of ore, worth for length and width of sink, 9 ft. by 6 ft., 20 tons, or 1200. per fathom. In the 130 east 5 ft. of the lode is being carried, which is worth 12 tons, or 360. per fathom. The lode in Castle's winze being stopped down below the 130 east continues a good course of ore, worth 15 tons or 600. per fathom. Parson's winze, below the 130 east, is down 6 ft. depth required by the 145 by the side of the lode. The lode will now be cut through for proof of its size and value.

DENBIGHSHIRE CONSOLIDATED.—John Pryor, Sept. 30: The favourable indications noticed in my last regarding the 112 east I am pleased to say continue and increase, but it will take us some time to open on the ore. The lode is still a value thereon. The new lode in the 112 west is exhibiting great indications of increased production of lead ore. An assay has been made of the lead taken from this point, the result being 85 per cent. of metal, which is a very fine specimen.

DEVON GREAT CONSOLS.—J. Richards, Sept. 30: Wheel Emma: New Shaft, near South Lode: The lode in the 160 east is 3 ft. wide, carrying a branch of good quality ore from 3 to 4 in. wide on the south part thereof, and also produces a quantity of arsenical mundie. In the 160 west the lode is from 4 to 5 ft. wide, containing capel, quartz, mundie, and stones of ore. In the 145 east, the lode is a good course of ore, worth 10 tons or 400. per fathom. In Dymond's winze sinking below the 145 east, the lode continues a fine course of ore, worth for length and width of sink, 9 ft. by 6 ft., 20 tons, or 1200. per fathom. In the 130 east 5 ft. of the lode is being carried, which is worth 12 tons, or 360. per fathom. The lode in Castle's winze being stopped down below the 130 east continues a good course of ore, worth 15 tons or 600. per fathom. Parson's winze, below the 130 east, is down 6 ft. depth required by the 145 by the side of the lode. The lode will now be cut through for proof of its size and value.

DYLIFFE.—E. Rogers, Sept. 29: Dylyffe Lode: The 120 end is full of attle, and suspended for a few days. The men are put to sink a hole through an arch in the bottom of the 40 to receive the same. This will keep the level firm, and enable us to rise a large quantity of lead ore at a profit. We are stopping the back of the 120, and also cutting ground for a bob at the 105 in order to fix the necessary appliances for sinking the engine-shaft on the underlie of the lode below the 120. There is no alteration in any other part of the mine: 80 tons of lead ore have been sold to-day to Messrs. J. Walker, Parker, and Co., at 150. per ton, realising 12000.

EAST VAN.—W. Williams, Sept. 29: For the last three or four days, owing to the very heavy rains, we have been drowned out of the shaft, but I am happy to say that we holed through the shallow adit level to shaft to-day, which will drain off the surface water. The shaft is down 11 fathoms. The 25 has for the last few days improved, and is now beginning to dump, with a hardening of the ground, and occasionally good faces of lead ore. As I before stated, we are pushing this end forward with all dispatch, in order to get opposite the new shaft, when we shall cross boldly through the lode to produce a fine course of ore.

EAST WHEEL BASSETT.—Richard Pryor, Edward Adams, Sept. 29: The lode in the stope in back of the 50, at flat-rods shaft, is worth about 250. per fm. The men engaged in driving the 30 cross-cut, south of flat-rods shaft, are still progressing as fast as possible, and we hope to cut the lode met with in the 50 in about three weeks from this time. We shall draw to surface on Saturday next about 9 tons of copper ore.

EAST WHEEL GRENVILLE.—E. Hosking, W. Bennetts, Sept. 25: The mine is looking much the same as last reported.

FRANK MILLS.—James Rowe, jun., N. Addams, Sept. 29: Setting Report: The engine-shaft to sink below the 145 fm. level, by nine men, at 300. per fathom; shaft now down 11 fms. below that level. Winze to sink in bottom of the 145, north of cross-cut on west lode, by two men, at 40. per fathom; lode producing a little lead, and showing strong indications of an improvement soon. The 145, north of engine-shaft, to drive, by four men, at 40. per fathom. The 115 cross-cut, west of engine-shaft, to drive, by two men, at 150. per fathom. A cross-cut to drive west at the 100, south of engine-shaft, by two men, at 20. per fathom; we have intersected a branch in this cross-cut which produces a little lead, and are about 3 fms. more to drive to intersect the west lode. At the 60, north of Orchard adit-shaft, towards Exmouth mine, we are cross-cutting east and west to intersect the lodes, by four men, at 30. per fathom. The 60, north of cross-cut and south of Orchard adit-shaft on eastern branches, to drive, by four men, at 50. per fathom; these branches are producing saving work for lead, and looking very favourable for an improvement soon. The 45, north of No. 1 cross-cut, south of Orchard adit-shaft, on eastern branches, to drive by four men, at 50. per fathom; producing 10 cwt. of lead ore per fathom. Cross-cut to drive west at the 30, north of engine-shaft, by six men, at 50. per fathom; stratum very favourable for the production of lead. At Exmouth Mine we are rising in back of shallow adit, by four men, at 40. per fathom; lode producing saving work for lead. We have 11 tribute pitches working, by 26 men—nine pitches, by 19 men, at 80. per ton for lead, one pitch, by four men, at 60. per ton, and one pitch, by three men, at 60. per ton. Our machinery and pitwork is in good working order.

FURZE HILL (Tin).—Wm. Dudge, Sept. 29: In the midway level, east of Bell's shaft, the men are still cross-cutting south, but as yet there are no indications of the lode being near, as the ground is still dry. There is no change in any part of the mine to call for special remark at present. Our last parcel of tin sold weighed 3 tons 18 cwt. 3 qrs. 2 lbs., realising 2050. 4s. 9d., and we are now busily engaged preparing for this month's sale.

GAWTON COPPER.—George Rowe, George Rowe, jun., Sept. 25: The lode in the 117, east of King's engine-shaft, is showing a very kindly appearance, and producing fine stones of ore. The lode in the stope in the back of the 117 is worth 80.

per fathom. The winze sinking below the 105 is worth 140. per fathom. The winze sinking below the 95 is worth 90. per fathom. The lode in the stope in the back of the 95, east of winze, is worth 200. per fathom, and west of said winze 120. per fathom. The lode in the 82 east is showing a kindly appearance, with good stones of ore. The lode in the rise in the back of the 70 is worth 120. per fathom. All other points are without change.

GLYN.—James Roach, Sept. 30: The engine and all machinery attached thereto is very substantial and works admirably. Quantity of water to sink the winze has been exceedingly boisterous and wet, which prevented our doing as much in the engine-shaft as anticipated. We were under the necessity of covering the engine, drawing and pumping machine, which will dispense with further delay. All the ground opened east and west of cross-cut, in shallow adit level, yielded some very good stones of lead and a mixture of ore throughout. It is exceedingly promising at that depth, the strata is all that can be desired for the production of lead at deeper points. We shall resume sinking the winze next week.

GORSIEDD AND MERLLYN CONSOLS.—Wm. Edwards, Sept. 30: I have been all through the mine this morning; the operations which are now proceeding are being urged forward, but there is no material change during the past week. Considering the quantity of ore that has been raised at the shallow depth of 40 or 50 yards, and that our adit level will be underneath the same ground at a depth of nearly 100 yards, we should meet with considerable success; the vein in the level has been close and hard, as previously announced to you, but easier ground is before us, with every appearance of a further supply. We have tributaries at the 104, and I feel sure it will be found more or less productive.

GREAT RETALLACK.—J. Harris, Sept. 25: I am glad to tell you that the lode in the 40 east has very much improved for blende since my last, it being worth from 12 to 15 cwt. per fathom, with all the indications for a further improvement. The ground in the winze shaft has also improved for sinking, so I hope to report better progress in future.

GREAT WEST VAN.—Thomas Hodge, Sept. 30: During the past week we have experienced much rain, which caused a lift in the bottom, which is working well. We have now dropped a lift in the bottom, which is working well. The shaft is 5 fms. 4 ft. below the 34, and we hope to go on now with good speed. It will take another month to complete the top lodge at the old shaft. The men in the 46 cannot work more than about half of the time, in consequence of the stuff coming away from the other bargains. In the 46 west end the lode is getting more compact as we extend, showing strong spots of ore, with water oozing out more powerfully. At present the end promises well. In the 40 west end is poor. The stope in the back of the 40 east is worth 80. per fathom. The lode in the 34 west, on the new lode, is 2 ft. wide, composed of slate, lime, spar, lead, and blende ore—a promising end. In the 34 north cross-cut fair progress is being made, but nothing of importance has been met with since my last: the cross-cut has passed the line of lode seen at surface, so that there can be no doubt now that the new lode is identical with the one seen at surface, which I presume was the lode that the cross-cut was started for. However, we must continue on; I feel confident that we have another lode within reach, and if we can strike a vein in the same class of ore, our prospects are very cheering indeed, and it appears quite clear to me that we shall be in a position early next year to make very fair returns. Our pay and setting passed off well.

GUNESLAKE (Clitters).—Wm. Skewis, J. C. Secombe, Sept. 29: The lode in the 118 east is worth 80. per fathom, and in the rise in back of this level it is worth 150. per fathom. The stope in back is worth 300. per fathom. In the western end the lode is worth 60. per fathom, and in the (west) end it is looking promising, and in the stope in back it is worth 80. per fathom. In the western end the lode is worth 70. per fm., and in the winze sinking in bottom of this level it is worth 160. per fathom. The lode in the 140 west is worth 80. per fathom, and the stope in the back are worth as follows:—No. 1, 70.; No. 2, 90.; and No. 3, 100. per fathom. The lode in the 128 west is producing saving work for copper ore. The stope in back of this level is worth 130. per fathom. The stope in back of the 116 west is worth 100. per fathom. No other points of note.

HALLKYN DEEP LEVEL.—Sept. 27: Saturday last was our setting day at the above mines, and the following is an account of the bargains set for the month of October:—The trial or intermediate level, to drive east of junction on Panty-Gowen 22 yds. below the 174 yds. level, to two men, at 80. per yard; the lode at this point is about 2 ft. wide, principally composed of spar, and containing nice strong spots of lead ore and blende; looking promising for further improvement soon. The pitch below the 174 yds. level, east of junction on the Panty-Gowen, is set to four men, at 90. per fathom; the lode in this pitch is 1½ in. wide, worth 10 cwt. of lead ore per fathom. This pitch is going down in advance of the trial level. There is a large extent of unexplored ground before this pitch. The pitch below the 170 yds. level, north-east of junction on the deep level vein, to four men, at 90. per ton; the lode in this pitch is 4 ft. wide, worth 14 cwt. of lead ore per fathom. This pitch is worked down 24 yds. below the 174. There is yet a great deal of ground between this pitch and Lewis's shaft and the deep level, which, no doubt, will produce a good deal of ore when further laid open. There are still two miles of level to be continued by the side of the lode, which is being engaged drawing up and washing over the tributers' work for the last month.

HINGTON DOWN CONSOLS.—J. Richards, Sept. 30: Bailey's Shaft: In the shaft sinking below the 150 fair progress continues to be made. In the 150 west, where being stopped west of communication, the lode is worth 5 tons of ore or 150. per fathom. In the stope in the back of the 150 west the lode is worth 3 tons of ore or 240. per fathom. The lode in the two stopes in the bottom of the 140, east and west of Allen's winze, continues worth on an average 8 tons of ore or 320. per fathom. The 140 west is being continued by the side of the lode, the ground at present proving spare for progress. In the two stopes in the bottom of the 120 west the lode is still worth on an average 6 tons of ore or 150. per fathom. In the 120 west the lode is large, 5 ft. wide, composed of quartz, mundie, capel, peach, and ore, and promises improvement. In Andrew's winze, sinking below the 110 west, the lode is worth 2 tons of ore or 60. per fathom. In the stope in the back of the 110 west, and west of Kitt's rise, the lode is worth 4 tons of ore or 120. per fathom.

ILLIGAN.—Richard Pryor, Sept. 29: We have no change to notice throughout this mine since our report of last week.

KINGSTON CONSOLS.—G. F. Richards, Sept. 30: Favourable progress continues to be made in the fixing of the different machinery and other work, and we are now drawing towards a state of completion with the chief part thereof. The dressing machinery is being prepared as fast as possible, and which we hope will soon be ready to fix. The pumping-engine continues to work most satisfactorily.

LADYWELL.—Arthur Waters, Sept. 30: There is no change worthy of note here since my last report.

LEIGHALAD.—Sept. 29: Pascoe's Shaft: In the deep-adit level the lode in the present forebore is about 4 ft. wide, composed of clay-slate, quartz, carbonate of lime, and sulphur, impregnated with lead adit blende—a very kindly lode. The air-blower is erected, and we gave it a trial to-day. I am pleased to say that it will nearly blow out a candle in the forebore, a distance of more than 150 fms. I shall put on two more men here next week, in order to push forward the end under the course of ore in the level above. The lode in No. 4 level is of a very promising character, and is going in a westerly direction, consequently the lode will be more productive as the end is advanced. In the winze sinking below No. 4 level the solid rib of ore, which is about 8 in. wide, is rapidly dipping westward, but the lode is of such a promising character that it warrants deeper development in its present course; very strong feeders of water are issuing out of the lode in the bottom of the winze, which is a good indication. In No. 3 level the part of the lode carried is 3½ ft. wide, composed of bastard granite, intermixed with spar and sulphur—a very kindly looking lode. We have driven off 2½ fms. of the rise, which has holes, No. 3 level, last month, and have 4 to 6 ft. more to drive to reach the ore visible on the north part of the lode, we shall then cross-cut through the lode, and I have no doubt a valuable piece of ground will be opened up.

LOVELL (THE).—Joseph Prisk, Edward Kempthorne, Sept. 23: Saturday last was our monthly setting-day, full particulars of which is given in the annexed report. The new pump-winze to sink below the 40, by six men, at 160. per fm.; the lode is 8 ft. wide, worth 250. per fathom. The 40 to drive west of shaft, by four men, at 120. per fm.; the lode is 12 ft. wide, worth 120. per fm. No rise, in back of the 40 east, to six men, at 250. per fm.; the lode is worth 250. per fm. for the part carried, 9 by 8. No. 2 rise to four men, at 120. per fm.; the lode is 9 ft. wide, worth 200. per fm. No. 1 stope, west of No. 1 rise, in back of the 40 east, to six men, at 120.; the lode is 15 ft. wide, worth 400. per fm. No. 2 stope, east of said rise, to two men, at 120. per fm.; the lode is 10 ft. wide, worth 250. per fm. The winze in the 30 east to six men, at 130. per fm.; this winze is down about 2 fms. below the level, and for this d's sake has been poor, but has now very much improved, and we feel sure by breaking through the stuff from here, the value of which we shall give as soon as possible. We hope to communicate this winze with No. 1 rise this week, which will enable us to increase the returns and facilitate the working of the mine in general.

MARK VALLEY.—J. Secombe, James Stenlake, Francis Renals, Sept. 24: Setting Report: To sink Salisbury shaft below the 136, by nine men, at 500. per fathom. To drive the 136 west, on the south side of Marke's lode, by four men, at 80. per fathom; the ground in this end is chiefly elvan and granite. To stoppe Marke's lode, in back of the 124, by two men, at 100. per fathom; the lode is worth 100. per fathom. To stoppe Marke's lode, in bottom of the 100, by four men, at 50. per fm.; worth 5 tons per fathom. No. 1 stope, in bottom of the 80, on Rosedown lode, by four men, at 60. per fathom; worth 5 tons per fathom. No. 2 stope, in bottom of the 80, on Rosedown lode, by four men, at 70. per fm.; worth 3 tons per fm. No. 3 stope, in bottom of the 80, on Rosedown lode, by four men, at 80. per fathom; worth 5 tons per fathom. To stoppe the south part of Rosedown lode, in bottom of the 80, by four men, at 60. per fm.; worth 5 tons per fathom. The 70 west, on Rosedown lode, is not set; we have put the men to strip down a small portion of the south side to prove if there is any more lode standing in this direction. To drive the 60 west, on Rosedown lode, by two men, at 40. per fathom; worth 3 tons per fathom. To stoppe Rosedown lode in bottom of the 60, by four men, at 60. per fathom; worth 5 tons per fathom. No. 1 stope, in back of the 60, on Rosedown lode, by four men, at 40. per fm.; worth 3 tons per fm. No. 2 stope, in back of the 60, on Rosedown lode, by four men, at 50. per fm.; worth 4 tons per fm. To drive the 50 west, on Rosedown lode, by four men, at 70. per fathom; worth 3 tons per fathom. To stoppe Rosedown lode, in bottom of the 50, by four men, at 60. per fm.; worth 5 tons per fathom. To stoppe Rosedown lode, in bottom of the 40, by four men, at 60. per fathom; worth 6 tons per fm. To stoppe Rosedown lode, in back of the 40, by four men, at 30. per fathom; worth 2 tons per fm. To drive the 30 west, on Rosedown lode, by two men, at 60. per fm.; yielding occasional stones of copper ore. To stoppe Rosedown lode, in back of the 30, by three men, at 30. per fm.; worth 4 tons per fathom. To drive the 20 west, on Rosedown lode, by four men, at 80. per fm.; worth 10 tons per fm. To stoppe Rosedown lode, in bottom of the 20, by four men, at 60. per fm.; worth 3 tons per fm. To rise in back of the 10, for new shaft, by six men, at 200. per fathom. During the past month we have completed the clearing up of Rosedown adit shaft, and the men put to resume the sinking of new shaft; but the floods of the past few days have so increased the water we were obliged to suspend operations here. The men are now engaged in driving the adit towards the shaft. Two pitches in back of the 113, on Marke's, by two men, at 100. in 17. each. A pitch in bottom of the 40, on Rosedown, by four men, at 130. 4d. in 17. A pitch in back of the 40, on Rosedown, by two men, at 130. 4d. in 17. The haulage at old floors by one man, at 100. in 17.

MONYDD GORDDU.—Richard Rowe, Sept. 29: I have nothing fresh to report since Thursday last. To-morrow being the end of the month, and measuring and setting-day, a full report shall be sent next week.

NEW CHIVERTON.—James Trewartha, Sept. 30: The engine-shaft is now 4 fms. 3 ft. below the 35; the ground here is favourable for sinking, and the lode in sinking a good improvement. The other tributary bargains and the tribute pitches are much the same with regard to value as stated on the 23rd inst.

NEW CONSOLS.—R. Pryor and Son, T. Jenkin, H. Vial, Sept. 29: No particular change worthy of remark has taken place in our underground department during the past week.

NEW HENDRE.—W. Rowe, Sept. 27: Pay and Setting Report: The deep adit end was set to drive to-day at 60. lds.; the ground has recently become somewhat harder, and the price has had to be raised. The lode is just the same as last month, producing a little copper ore.

NEW HOSKING.—E. Hosking, Wm. Bennetts, Sept. 25: Setting Report: To drive the 67, west of Pool's shaft, by six men, at 50. per fathom; the lode is 2½ ft. wide, producing some good stones of copper ore, and from its appearance we are daily expecting an improvement. To rise above the 67, west of Pool's shaft, by two men, at 20. per fathom; the lode is worth for copper ore 40. per fathom. To drive the 68, west of Pool's shaft, by six men, at 50. per fathom; the lode in this end is improving, is now 2 ft. wide, and worth 80. per fathom. To sink the winze below the 58 west, by six men, at 60. per fathom; the lode is 20 in. wide, and worth 80. per fathom.

NEW SOUTH MERLLYN.—P. Rowlands, Sept. 30: In the sinking below the north level the vein is now 3 ft. wide, composed of spar and lead, and showing an improvement to-day. I fully believe as we go deeper that the lode will turn out very well.

NORTH BUSY (Special Report).—W. Giles, Sept. 28: According to your request I have carefully inspected North Busy Mine, and find the 22 or deep adit level extended 15 fms. west from cross-cut on the course of the lode, which will average 2½ ft. wide, and will produce a little tin, with occasionally some copper ore; this end is now within about 12 fms. of a good lode of copper ore in the 12, and above; this end is and should be driven with all possible speed, as much of the future of the mine depends on its opening. The 12 is extended west about 70 fms. from cross-cut; in this driving I find about 30 fms. of copper ore ground in length. The backs have yielded good quantities of average produce copper, for which year you will tell me. The same stope is yielding now in paying quantities. In the bottom of the 12 I find a winze down about 6 fms., the lode is 4 ft. wide, and worth 120. per fathom. The east stope in the bottom of the 12 is worth 200. per fathom, stopping at 300. per fathom. Davey's shaft is sinking below this level, now down about 5 fms.; the lode is 5 ft. wide, producing a little tin and copper. From the 12 there is a cross-cut driving north to intersect the north cross-cut, which is a most important object, and there is good reason to think that it will be a change for the better. The stope in the 12 is a good stratum of light slate, and in itself well defined, where we have good reason to expect a good copper mine. In conclusion, I beg to say this is one of the best looking copper mines for the depth I ever recollect to have seen.

NORTH HENDRE.—J. Lean, Sept. 30: No change calling for remark has taken place since last report, except in No. 1 south level, which has fallen off in value; we expect to see it improve again after a few feet further driving, as the ground appears to be undergoing a change. The dressing and other surface operations are being pushed on as fast as possible.

NORTH LAXEY.—R. Rowe, Sept. 28: We are making fair progress in sinking the north shaft below the 121; at present the lode is small, and not of much value. In the 121 driving north the lode is 2 ft. wide, and worth from 5 to 10 cwt. of lead per fathom. In the same level driving south the lode is 1½ ft. wide, well mixed with blende and lead. In the 84 there is now a trial level driving north into whole and new ground; the end has again been hard, and the lode quite nipped, but there are signs of a change for the better. The stope in the 84 is worth 1 ton of lead per fathom, and in the roof 15 cwt. per fathom. In the 80 we have three stopes, yielding in value from 10 cwt. to 1 ton of lead per fathom.

NORTH POOL.—Wm. C. Vivian, F. Clymo, Sept. 30: In the 40 we have two smooth, well defined walls 5 ft. apart, which space is filled principally with horn-blende and greenstone rock, but with several seams, composed of quartz, copper ore, and blende; these seams are tending towards the south wall in going forward, and the accompanying of a large increase of copper.

NORTH TRESKERRY.—Richard Pryor, Sept. 28: Setting Report: On Sunday last we set the following bargains:—The deep adit level, to drive west of Doctor's shaft, by four men, at 70. per fathom; lode 4½ ft. wide, producing good stones of copper ore and tin. The deep adit cross-cut, to drive south of Scorrer's Consols shaft, by four men, at 30. per fathom. To stoppe the back and bottom of the adit level, east of Highbarrow shaft, by six men, at 40. per fathom; lode worth about 150. per fathom for tin. To stoppe the back of the 30, east of Highbarrow shaft, by four men, at 40. per fathom; lode worth 170. per fathom. No further change to notice since last report.

OLD TINCROFT.—James Pope, Sept. 29: In the 30, west of Diamond shaft the lode is worth for tin 70. per fathom. In the 10 west the lode is 5 inches wide, worth 140. per fm. for tin. We are getting on with the surface work as fast as possible, and shall have the roofing put on the engine-house in a few days.

OLD TREBURY.—W. Hancock, W. T. Bryant, Sept. 30: Good progress is being made in driving the different levels. The lode in the 90 south is worth 80. per fathom. In the 80 south the lode is getting well defined, and producing stones of ore. We are daily looking forward to having an improvement here in the 70 ore. The men are taking down the lode; it is 6 ft. wide, worth fully 150. per fm. The stope and pitches are much the same as at last setting. We sold to-day two parcels of ore—No. 1, computed 30 tons, at 200. 15s. 6d. per ton, and No. 2, at 230. 2s. 6d. per ton.

PARIS MOUNTAIN.—T. Mitchell, Sept. 27: Setting Report: The 90 cross-cut south, by 5 men, the month, at 100. per fm.; the ground contains much the same as for some time past, and several small veins have been met with, composed of spar, sulphur, and strong spots of copper ore, which speaks well of this part of the mine where we expect to cut some very important lodes. The intermediate level, west, to stoppe by four men the month, at 60. per fm., lode worth 3 tons of copper and 2 sulphur per fm. During the last 2 months we have been driving at this place and finding the lode ore, have now let it to stoppe. The stope at the 50, west of cross-course, by eight men, at 60. per fm., yielding 5 tons of copper ore and 2 sulphur per fm. The stope at the 40, west of cross-course, by four men, at 70. per fm., lode worth 4 tons of copper ore and 2 sulphur per fm. The stope at the 30, east of rise, by six men, at 60. per fm., worth 10 tons of copper ore, and 1 of sulphur. Stope at the 65, over the latter, by six men, at 60. per fm., worth 4 tons of copper ore and 1 of sulphur. Stope at the 65, west of winze, by six men, at 60. per fm., yielding 5 tons of copper ore and 1 ton of sulphur per fm. Stope at the same level, east of winze, by six men, at 60. per fm., yielding 5 tons of copper ore and 1 ton of sulphur per fm. To drive the 65 west of cross-cut by four men, at 70. per fm. The lode here contains patches of copper ore and branches of sulphur, worth about 1 ton of each per fm., and we are looking for an improvement here as soon as we meet with a cross-cut. A stope at the 45, east of cross-course, by two men, at 60. per fm., lode at present with two tons of copper ore and 1 of sulphur, and likely to improve as we go eastward. The trial cross-cut at the 30, by 4 men, at 60. per fm., the ground here is beginning to show a little sulphur, which is a favourable indication. We have let 8 pitches, to 16 men, at the usual prices. The late heavy rains have further improved the condition of the production pits.

PATELEY BRIDGE.—C. Williams, Sept. 29: The general appearance of the mines have improved a little since last week. The vein in the 10, west from the engine pump, is worth 2 tons of ore per cubic fathom; in end and stope east and west from rise 1½ ton per fathom, costing from 40s. to 50s. per fathom working. In the cross-cut west in the 20 the vein has improved, and is now nearly 12 in. wide, nearly solid ore, and worth fully 3½ tons of ore per fathom, the ground easy to drive, and will

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

raised during July month (say), 70 tons. Ore on hand (say), 85 tons, average quality, besides (say) 30 tons of low quality put aside for jiggling. So far we have gone, I have every reason to be satisfied with the opening prospects, and there can, I think, be no reasonable doubt of still better results as the mine is deepened, especially east of Hall's shaft, where we seem to have got into ore-bearing strata. I am still, and I may say increasingly anxious to see a cross-cut driven south of the Kurilla lode to intersect any lodes lying between it and the Duryea, which is the line in which the lodes of the Wallaroo, Devon Consols, and the Doria, as well as the Kurilla and the new lode, are productive of ore."

* With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence: Rock Drills—the Progress in the Sutor Tunnel; Colliers' Sliding Scales (J. B. Huntington); Blasting in Coal Mines; Birmingham and Blackley Hall Colliery Company; Thorpe Gable Hall Colliery; Chapel House Colliery; Utah Mining Company (L. G. Heath); Tin Mines of Tasmania; South Australian Mines and Railways (J. B. Austin); Channel Tunnel Intercommunication (W. Austin); The Diamond, No. V. (W. White); Gold in Wales, No. V. (T. A. Readwin); Ore Buying; Nascent Copper Process (S. H. Emmens, G. Evans); Steam Superseded—Tross's Patent Hydramino, England; Divining Rod (E. Skewes, T. Spargo); English Mine Agents, No. IV.; Old Mine Burrows (T. J. Barnard); Wheel Umy, and the Late Engineers (J. Hocking and Son); Diversion of Watercourses; Tingtang Consols (R. Symons); Terras Mine (R. Symons); Caldbek Fells Consolidated Lead and Copper Mines, Cumberland (P. Hawke); Clifton Silver Mining Company Gold Refractory in South Australia—Mining on the Pacific Coast—Notes on the Manufacture of Anthracite Coke in South Wales—Foreign Mines Reports—Foreign Mining and Metallurgy—Marsden's Improved Stone-Breaking Machinery (illustrated)—Patent Matters, &c.

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, OCT. 1, 1875.

COPPER.		s.	d.	£ s. d.	IRON.		s.	d.	£ s. d.
Best selected... p. ton	91	0	0	92	0	0	0	0	0
Tough cake and tile	89	0	0	90	0	0	0	0	0
Sheeting and sheets	89	0	0	90	0	0	0	0	0
Boiler	96	0	0	97	0	0	0	0	0
Bottoms	95	0	0	96	0	0	0	0	0
Old	80	0	0	81	0	0	0	0	0
Australian, Wallaroo	92	10	0	93	10	0	0	0	0
ditto other brands	89	10	0	90	10	0	0	0	0
Chili bars, g.o.b.	82	10	0	83	10	0	0	0	0
Wire	82	10	0	83	10	0	0	0	0
Tubes	82	10	0	83	10	0	0	0	0
BRASS.		s.	d.	£ s. d.	STEEL.		s.	d.	£ s. d.
Sheet	94	0	0	95	0	0	0	0	0
Wire	94	0	0	95	0	0	0	0	0
Tubes	94	0	0	95	0	0	0	0	0
Yellow metal sheeting	94	0	0	95	0	0	0	0	0
Sheets	94	0	0	95	0	0	0	0	0
SPELTER.		s.	d.	£ s. d.	ZINC.		s.	d.	£ s. d.
Foreign on the spot	25	0	0	26	0	0	0	0	0
to arrive	25	0	0	26	0	0	0	0	0
TIN.		s.	d.	£ s. d.	LEAD.		s.	d.	£ s. d.
English block	90	0	0	91	0	0	0	0	0
Do., bars (in br.)	91	0	0	92	0	0	0	0	0
Do., refined	92	0	0	93	0	0	0	0	0
Banco	92	0	0	93	0	0	0	0	0
Straits	86	0	0	87	0	0	0	0	0
Australian	84	0	0	85	0	0	0	0	0
TIN-PLATES.		s.	d.	£ s. d.	QUICKSILVER.		s.	d.	£ s. d.
IO Charcoal, 1st qua.	21	0	0	22	0	0	0	0	0
IX Do., 1st quality	18	0	0	19	0	0	0	0	0
IX Do., 2d quality	16	0	0	17	0	0	0	0	0
IX Do., 3d quality	14	0	0	15	0	0	0	0	0
IX Coke	11	0	0	12	0	0	0	0	0
IX Ditto	10	0	0	11	0	0	0	0	0
Canada plates, p. ton	14	0	0	15	0	0	0	0	0
Ditto, at works	14	0	0	15	0	0	0	0	0

* At the works, 1s. to 1s. 6d. per ton less. † Add 6s. for each X.
Terra plates 2s. per box below tin-plates of similar brand.

REMARKS.—The improved character of our markets, as commented upon last week, has been maintained throughout that which is now drawing to a close. The period through which dulness in trade has prevailed has been of such long duration that manufacturers and sellers will not be slow to take advantage of any renewal of vitality which may occur to advance quotations somewhat above the level at which very generally metals are now ruling. The revenue returns for the second quarter of the financial year, which ended Sept. 30, have been published, and may be regarded, on the whole, as satisfactory, showing an increase upon the quarter of 400,000, in the national income, as against the corresponding quarter of the previous year. The increase is mainly derived from increased Custom returns—Excise, Stamps, Post Office, and Telegraphs—being just such items as prove the inherent soundness of the trade of the country, and show that notwithstanding isolated branches—in the export trade more particularly—may be dull, the general prosperity is increasing. The position of the money market, although not one to cause anxiety, should yet be regarded with attention. It is surely an anomaly that the rate of discount in Prussia should be so much in advance of that in London, and the financial depression ruling in the former country cannot fail to bear fruit in this. Owing very much to the operations of free trade the price of wheat will probably not advance materially, but as the home crop is short English capital will be needed abroad to supply the deficiency, and thus a combination of causes may tend towards a tightness in the money market, for which, though it may not come immediately, it is as well to be prepared.

COPPER.—The market opened quiet at the beginning of the week and Chili bars G.O.B. were dealt in in small parcels at 81½. 10s. to 81½. 15s., usual cash terms, and best brands 83½. On Tuesday the market stiffened, and a larger business was effected at slightly advanced quotations. G.O.B., 82½, and Lots at Swansea, 82½. 5s. cash; and G.O.B. with long prompts, 81½. 15s. On Wednesday, the improvement of the previous days was maintained, and business became more general. G.O.B. again changed hands at 82½; named brands, 82½. 10s. to 82½. 15s.; and best brands, 84½. cash. Yesterday a cargo of ore realised 16s. 6d., and regulus 17s. Chili bars were sold, G.O.B. 82½. 5s. at 82½. 10s. cash. To-day the market is firm, but without any material alteration in the price of bars. Tough is quoted 82½; best select, 90½; strong sheets, 90½; India sheets, 94½; and yellow metal, 7½ at 8½.

IRON.—The position of the iron trade, though mainly unchanged, is perhaps slightly improving. From South Wales the report comes that small orders are being given out more generally, and that the works are in somewhat better employ. Owing to the near approach of the termination of the shipping season, efforts are being made to dispatch orders that are on hand for the Northern ports, and the clearances both of rails and merchant bars have been going forward satisfactorily. In the month of August the returns show that the following shipments were made from the three principal ports in the South Wales district, exhibiting a great increase over those of former months, but yet much below the average returns of ordinary times. From Cardiff, 12,000 tons; from Newport, 10,900 tons; from Swansea, 790 tons—giving a total of 23,690 tons. The re-opening of certain portions of works which have been closed for a considerable time is contemplated, but it is questionable whether the prospects for the future are sufficiently good to admit of this being carried into effect before next Spring.

Judging from the demand for pig-iron in the North of England, it would augur well for the iron trade were the consideration of the number of furnaces not in blast to be omitted from the calculation. The shipments to the Continent continue as brisk as ever, but the demand for Scotch consumption shows some signs of falling off. Foundry-iron for home consumption is in special request, and quotations are consequently very firm for this description. The finished iron market is very quiet in a general way, but it is reported that a few fair orders for rails have been received—one for the first Chinese railway. Should a railway really be established in that great empire, and the authorities become convinced of its utility, the field which would eventually open for railway enterprise in China would be incalculably great; but it is to be feared that the mass of prejudice on the part of the nation to be overcome, and not the *vis inertia*, but the positive opposition, on the part of the mandarins to the introduction of the arts of civilisation is such that a long time must elapse before any great progress can be expected. Still, it is within the memory of many now living how that in the early part of this century, and in this land of enlightenment, surveys for projected railways were obliged to be conducted with the utmost secrecy, because of the opposition which the introduction of the new invention excited, and yet the progress made in half a century in the covering of the surface of the earth with a net work of railways is almost incredible; and it may be that the history of railways in England and the civilised world may repeat itself in China. No. 3 pig iron is quoted in the Middlesbrough market, 54s. 6d. to 55s.; No. 4, 48s. 6d. to 49s. It is pretty certain that stocks are continually being reduced, inasmuch as the demand is greater than the quantity supplied by the limited number of furnaces now in blast, and as it is not contemplated to increase the number at present, prices will probably be fully maintained, and perhaps forge iron may become dearer.

The demand for plate iron is sluggish, and in view of a continuance of existing dulness in this department a reduction in the establishments for the winter season is now taking place. The market for Scotch pig iron opened steady at the beginning of the week, but on Tuesday considerable excitement prevailed, and a large business resulted at from 67s. 4½d. to 69s. cash, and at the close there were sellers at 68s. 10½d., and buyers at 68s. 9d. On Wednesday a further advance was reported, and business was done at 69s. 9d. cash, and at 69s. 6d. one month fixed. Yesterday the market was quiet, sellers were asking 69s. 3d., and buyers offering 68s. To-day the market has receded, and the closing quotation is 68s. 3d.

Week ending Sept. 26, 1874 Tons 11,359
Week ending Sept. 26, 1875 10,164

Decrease 1,195
Total increase for 1875 Tons 85,362

Imports of Middlesbrough pig-iron into Grangemouth—total increase for the three quarters of 1875, as compared with the similar period of 1874, 14,780 tons.

LEAD.—The market has been quiet but firm, and no alteration in

the rates has taken place. Good soft English pig, 23½. to 23½. 5s.; soft Spanish, without silver, 22½. 15s.

SPELTER.—Silesian silver about 25½. Stock in London on Sept. 30 only 82 tons.

QUICKSILVER.—Business has been done at 14½. 10s., at which quotation the market closes.

TIN.—The market has been strong throughout the week, with some little fluctuation, and the Dutch Trading Company's sale of 22,900 slabs of Banca has gone off without animation at 54½ fl. to 52½ fl., average 52½ fl., or equal to about 90½. 10s. laid down here. Straits rule at about 80½. Australian, 84½.

TIN-PLATES.—There may be a little more doing in tin-plates, but the trade is still very dull.

THE IRON TRADE (Griffiths's Weekly Report).—Friday Evening. We have to report an advance of 1s. per ton in G.M.B. Iron on the Glasgow Exchange this week. The closing price this day week was 67s.; to-day the closing price is nominally 68s. cash next Monday. The following is our 4 o'clock telegram. Business done, 68s. to 68s. 3d. cash to-day. Market closing nominally 68s. cash on Monday. We quote makers No. 1 Iron as follows:—Garthwaite, 78s.; Colnes, 83s.; Calder, 78s.; Langloan, 78s.; Summerlee, 68s.; Monkland, 67s. 6d.; f.o.b. Glasgow; Glengarnock, 71s.; Eglinton, 68s.; f.o.b. Androssan; Shotts, 78s.; f.o.b. Leith; Kennel, 68s.; f.o.b. Bo'ness. The time allotted for the shipment of iron this season to the Baltic ports is now but short. We observe an absence of that pressure on the manufacturers for deliveries required for the northern ports at this season which we have witnessed in former years. This indicates that the Russian demand this year has not been up to the usual average. The rail trade continues depressed; complaints from the rail mills on the Tees of the slackness of orders are numerous.

The Welsh markets are a little better supplied with orders. Prices, however, for rails at these important centres are very low and unsatisfactory. The demand for best Yorkshire and Staffordshire iron is steady, and prices for marked bars, particularly in Staffordshire, are firm up to list rates. With regard to second-class iron in Staffordshire prices are a shade better, and the makers are very firm. The demand for sheet-iron, particularly for galvanising, keeps up; we have had a steady business in hoops, rail-roads, and bars, and the demand for boiler plates of the best brands is better than it was. The raw material is improving to some extent in value on the Glasgow, Middlesbrough, and Birmingham Exchanges.

At Birmingham, where nothing but sound legitimate sales in pig-iron are effected, a very large business has been done during the last fortnight: 2000 tons of Sparrow's Fwd, 1000 tons of Dave's Ormsby (the latter melters), and various other considerable sales of best pig iron, were reported at the Birmingham Exchange yesterday. A circular has been issued by the Earl of Dudley's agent to-day raising the price of slack, per ton, and there are fears in the Black Country that some difficulty may arise in respect to collier's wages, which it is hoped the good sense of the advisers of the colliers may avert. The Quarter-day will be held in the Birmingham Town Hall on the 14th inst., a large gathering is expected. It is, however, more than probable that no change will take place in the price of iron at this Quarter-day. We have no change to notice in the market for tin-plates. Business has been somewhat restricted on our own market this week, probably buyers are waiting for the result of the quarterly meeting of this trade, which will be held the week after next.

Messrs. Harrington, Horan, and Co. (Liverpool).—Arrivals here during the fortnight of West Coast, S. A., produce—Aconagua, from Valparaiso, 247 tons bars, 300 tons ingots, 5 tons Barilla; Maravilla, from Valparaiso, 136 tons bars; Grace Gibson, from Valparaiso, 15 tons bars; Montezuma, from Valparaiso, 17 tons bars; Scotch Glen, from Valparaiso, 17 tons bars; American, from Colon, 91 tons bars. At Swansea—Alpha, from Pena Blanca, 385 tons regulus Pacific, from Gatico, 610 tons ore; Lord Marmion, from Lota, 725 tons bars; Hawkeye, from Carrizal, 740 tons regulus; Epsilon, from Tocopilla, 360 tons ore, 450 tons regulus. Stocks of copper (Chilian and Bolivian) in first and second hands, likely to be available, we estimate at—

Ores.	Regulus.	Bars.	Ingots.	Barilla.
Liverpool	970	9,663	628	—
Swansea	—	2,474	—	—

Total 970 12,137 628
representing about 13,200 tons fine copper, against 13,475 tons Sept. 15; 15,600 tons, Sept. 30, 1874; 20,000 tons Sept. 30, 1875; 21,000 tons Sept. 30, 1876. Stock of Chili copper in Havre, 1500 tons fine. Stocks of Chili copper afloat and chartered to date, 13,168 tons fine.

Messrs. James and Shakespeare.—COPPER: For bars a strong enquiry has existed, and as holders firmly declined all lower offers, the buyers have been compelled to pay the rates demanded, which, however, they have done with great reluctance, being under the impression that at a slight advance thereon a considerable quantity would be offered for sale. The rise since the 24th ult. amounts to about 20s. per ton, and it is difficult to effect purchases at the moment except at top quotations. The market is better regulated, but prices have not advanced as much as expected. English is rather dull, but smelters refuse to sell except at full prices.—TIN: English is quoted higher, but the demand is still very limited. Foreign descriptions continued active during the earlier part of the week, and 85s. and 88s. 6d. was paid respectively for spot Australian and Straits. On Wednesday, however, buyers ceased their operations, pending the result of the Dutch sale, and the "bears" took advantage of this to try and effect a fall in prices by making sales at lower rates, but as most of the holders remained firm a recovery soon took place and the market closed steady yesterday at our list values. At the Banca sale, on the 29th ult., 22,900 slabs were sold at an average price of 52½ fl., which is equal to 90s. 6d. per cwt. laid down in warehouse here.—QUICKSILVER has risen a further 10s. per bottle.

Messrs. Fry, James, and Co.—COPPER has been in steady request and transactions in Chilian daily, the value of which kind receded a week ago, but has since fully recovered. A cargo of ore and regulus sold a few days ago at 16s. 3d. and 16s. 9d. per unit respectively. There is a scarcity of available Australian copper, and hence transactions have been few, and at full rates.—IRON continues unchanged for manufactured kinds, but there is further recovery in value of Scotch pig.—TIN has excited much attention, and considerable fluctuations have resulted, some 40s. to 50s. difference in prices having been paid in about twenty-four hours; but the market is not held, there is not a strong demand, and the Banca sale at Rotterdam yesterday realised an average of about 90½. 10s. per ton delivered here.

Mr. Murrant.—TIN: A firmer market was apparent at the commencement of the week, and a heavy business resulted, the general impression being that higher prices must soon rule. A good deal of irregularity in value, however, occurred, owing to a number of operators selling to realise profits. At the Dutch sale of Banca, on Wednesday, about 716 tons realised an average price of 52½ fl., about equal to 90½. 10s., laid down here without commission, against 82½. 15s. at the last sale, on July 28. Since this the market has been steady. The week's sales other than the above are reported as 950 tons Straits, and 400 tons Australian at 80s. to 88s. for cash and forward delivery.—COPPER: The demand for Chili has been somewhat slack, chiefly, it is said, to cover bear sales; and in anticipation of light charter better prices have been asked and paid. At the Swansea ticketing on Tuesday last, 202 tons of ore in fine average produce 21½ per cent. brought an average price of 16s. 6d. per unit. In English the demand for manufactured has not been heavy, but prices were pretty well maintained. The reported sales of Chili are 1500 tons g.o.b. and best marks, at 81½. to 84½. for cash and arrival.

Messrs. French and Smith.—TIN has been irregular; Straits was sold as high as 87½, and declined to 85½; it is now 88½. spot. The sale in Holland yesterday, 22,900 slabs, went at an average price of 52½ guilders, equal to 90½. 10s. London. As the deliveries from London this month are over 1200 tons we shall probably have a firm market.

Messrs. Sanford and Bird.—COPPER is firmer, and there is a better demand for manufactured.—TIN: A large business has been done during the week, at advancing prices. The sale in Holland this day of 23,000 slabs of Banca realised equal to 91½. per ton laid down here. The market was somewhat unsettled in the morning, but closes firm, with very little offering on the spot.—SPELTER is very firm.—SHEET-ZINC is firmer.

In consequence of a rise of 2½. per ton in the standard for tin ores the MINING SHARE MARKET opened very briskly this week, and a considerable advance took place in a few prominent mines, but as the settlement of the fortnightly account approached there was a reaction, and on Wednesday a fall of 1½. or 2½. per share on the heavy stocks. On Friday they again improved, with a brisk demand, and left off better.

The Banca sale of tin has passed off satisfactorily, 22,900 slabs were sold at a price representing about 92½. per ton in London, or an advance of 8½. per ton on last sale in July, when the price realised was about 83½. per ton.

The mines chiefly dealt in have been Carn Brea, Dolcoath, Tincroft, Wheal Grenville, Pateley Bridge, Tankerville, Roman Gravels, South Condurow, Parys Mountain, Penstruthal, Great Laxey, Marke Valley, West Chiverton, West Tankerville, Wheal Kitty (St. Agnes), Relistian Consols, and a few others.

Carn Brea advanced to 62, 64; they dropped to 60, and leave off 57½ to 60; Dolcoath advanced to 49, 51, and leave off 47 to 49; Tincroft reached 27 to 29, and leave off 26 to 28; Cook's Kitchen, 83 to 9. Great Laxey, 154 to 164; the balance-sheet to be presented to the general meeting on the 13th shows returns of lead ore from Feb. 10s. to Aug. 6 (1200 tons), 23,602½. 10s.; blende (8790 tons), 26,527½. 10s.; total returns, 55,130½. The costs during the same period were—Labour, 16,972½. 17s.; merchants' bills, 4417½. 5s. 6d. royalty to the Crown, 4299½. 5s. 6d.; freights and insurance, 2876½. 1d.; and other expenses, bringing the total to 29,647½. 6s. 6d. The dividends paid—6s. per share in April and 8s. per share in July—amounted to 10,500½; and after placing 4000½. to the reserve fund, there is a balance carried forward of 11,643½. 16s. 8d. The stock of ore on hand is valued at 11,410½. 7s. The agents venture to assert that the shareholders may very fairly be congratulated on the success that has resulted in this continued vigorous prosecution of the mine throughout in all its departments, and its present position for the future. The prospects underground were good as a whole, and the returns for the current six months will be quite equal to the very satisfactory returns of the past six months. Wheal Jane,

3½ to 3½; at the meeting here the accounts, as presented, showed a profit on three months' working of 133½. The costs to the end of July were 2559½, and credit was taken for 54 tons of tin unsold, at 50½. per ton. The water has been forked to the 60 since last meeting, and the 60 east is worth 16½. per fathom. There are 11 tribute pitches working, varying from 6s. 6d. to 13s. in 1½, and more can be done should the price of tin improve.

South Carn Brea, 1½ to 2; at the meeting, held in Cornwall, the accounts, charging up costs to July, and crediting ores not yet sold (400½), showed a balance against the mine of 782½, and a call or 3s. per share was made. Great Wheal Vor, 3 to 1; the accounts, as made up to the meeting, show a balance against the company of 1959½, and a call of 7s. 6d. per share was made. The prospects of the mine are considered very favourable. The lode at West Mill shaft is looking well, about 3 ft. wide, with 6 in. of almost solid tin. South Roman Gravels, 3 to 5; in our last a clerical error occurred; the sum the agent considered necessary to see the mine to the 60 was 2500½, and not 4500½. Roman Gravels, 12 to 12½; the 80, south of Corfield's, is worth 5 tons of lead ore per fathom; the 65 south 2 tons. The sampling for the month is 200 tons of lead ore. Tankerville, 10½ to 10½; no change in the mine. Van, 27 to 29; the directors have declared a dividend of 14s. per share. Van Consols, 1½ to 2; West Basset, 6 to 6½; West Chiverton, 15 to 16; Bog, 6s. to 8s.; Cathedral, 25s. to 27s. 6d.; East Caradon, 1½ to 1½; East Lovell, 7½ to 8½; East Pool, 15 to 16; Hingston Down, 3 to 1; Old Tincroft, 4½ to 4½; Ladywell, 2½ to 3; Marke Valley, 3½ to 3½; Parys Mountain, 11s. to 13s.; Pennerley, 1½ to 1½; Penstruthal, 11s. to 13s.; Plynlimmon, 9s. to 11s.; Prince of Wales, 2s. 6d. to 5s.; St. Patrick, 20s. to 25s.; Bampfylde, 15s. to 20s.; Tylwyd 20s. to 25s.; Rosewall Hill and Ransom, 4 to 5; South Caradon, 120 to 130; South Condurow, 6 to 6½.

South Crofty, 26 to 28; South Frances, 4 to 6; West Esgrail Le, 3 to 5; West Frances, 9 to 9½; West Tankerville, 27s. 6d. to 30s.; West Tolgus, 57½ to 60; Wheal Crebor, 2½ to 2½; Wheal Grenville, 2½ to 2½; Wheal Kitty (St. Agnes), 3 to 3½; Wheal Pevor, 3 to 4; Wheal Umy, 3 to 3½. Devon Great Consols, 2½ to 2½; the lode in the 145 east is worth 40½. per fathom for copper ore. Dymond's winze is yielding 20 tons of copper ore per fathom, worth 120½. The 130 east 12 tons per fathom. Castle's winze 15 tons, or 60½. per fathom.

Rookhope Valley, 4s. to 5s.; Mr. Blenkiron reports that four men are set to drive and break lead ore in the 15 fathom level, at 35s. per ton, lode worth 1½ ton per fathom; and in the 25 there are six men, at 50s. per ton, lode worth 2 tons per fathom, and it is estimated that these points alone should return 35 tons per month. North Laxey, 12s. 6d. to 15s. (2½. paid); the sinking of the shafts below the 121 is progressing, and the stopes in the 50 and 110 levels are yielding about 1 ton of lead per fathom. The lode improves in depth, and good hopes are entertained of a profitable mine at last. There have been sales this year of 150 tons of lead ore for 2336½, or 15½. 11s. 6d. per ton. Pateley Bridge, 6 to 6½, and largely dealt in; the lode in the 10, west from engine-sump, is worth 2 tons of lead per cubic fathom. In the cross-cut, west of the 20 fm. level, the lode has improved, and is now worth 3½ tons of ore per fathom, and ground easy to drive, and only costs 40s. to 45s. per fathom.

Birdseye Creek, 1½ to 2; Cedar Creek, 3 to 3½; Chontales, 3 to 3½; Eberhardt and Aurora, 7½ to 8; Emma, 1½ to 1½; Flagstaff, 1½ to 1½; Frontino and Bolivia, 1 to 1½; Javali, 10s. to 12s. 6d.; Panulillo, 3 to 1½; Richmond, 9½ to 10½; St. John del Rey, 397½ to 402½; South Aurora, 3 to 3½; Sweetland Creek, 2½ to 3½; Tecoma, 3 to 3½.

The market for Mine Shares on the Stock Exchange during the week has been irregular, the progress of new business having been interfered with by the fortnightly account, which was completed on Wednesday. The firmness of the metal market stimulates investment purchases, and the general impression gains ground that the improvement now taking place will be fully maintained.

Among home descriptions, Lead Mines have chiefly engaged attention, and in some instances an appreciable advance has been established. Van shares have found purchasers at 26 to 28, closing 25, 27; the quarterly dividend has been increased to 14s. per share (free of income-tax). Pateley Bridge shares have been largely bought for investment purposes, and towards the close further considerable purchases were made upon advices from the mines announcing important improvements. The lode in the 10 fathom level west is now worth 2 tons of lead per cubic fathom, and the stopes east and west from the rise 1½ ton per fathom, costing only 45s. to 50s. per fathom for working; in the cross-cut west in the 20 the vein is now 12 inches wide, nearly solid lead, worth fully 3½ tons per cubic fathom, in easy ground, costing only from 45s. to 50s. per fathom, carrying the whole width. Attention should be directed to the significant fact that the drive on the Pringap vein is in whole ground, leaving about 50 fathoms of "backs"; this lode is 6 feet wide, composed of fluor spar and gossam, mixed with ore, indicating that a course of ore will be opened out at an early date. The Gulf vein (or cross lode) is worth 1 ton of lead per cubic fathom, and very easy to work. In the east cross-cut from the 20-fathom level, two important lodes are expected to be intersected in about two months. These veins in the levels above produced considerable quantities of ore, yielding large profits. The mines throughout are opening out in a most satisfactory manner. There are already nearly 50 tons of lead on hand, and in three or four weeks smelting will be commenced. It is to be noted that this ore has been raised entirely from opening the ground, stoping not having yet commenced. The closing price is 6½ to 7½.

In Silver Mines the chief feature has been a renewed enquiry for Richmond Consolidated shares, which were scarce for delivery at the settlement. As much as 3½ per share "backwardation" was paid, and it is understood a large number of shares are still undelivered from the previous account. As is usual under such circumstances, attempts are not absent to "scare" shareholders into selling, but if such endeavours now answer their malicious purpose shareholders will have themselves only to blame. Cablegram received—"Week's run, \$41,000. Furnaces working well; mine looking well. Sunk 35 ft. in ore." Doré bars to the value of \$36,000 were issued from the refinery last week. The main Richmond hoisting-shaft is now down about 750 ft., and the quartz ore it has struck is reported to be getting denser. A cross-cut at the 700-ft. level to test the extent of the quartz bed is being driven, and the drift from the same level to intersect the main lode is progressing rapidly. On Sept. 7 the winze sinking on the main lode, at the distance of 13 ft. below the 600 ft. level, struck a boulder of limestone, but this must have been soon passed, as the cabled information of Tuesday names that the winze was down 35 ft. in ore below the 600 ft. level. The mine is thus clearly vindicating its character of a true lode formation, and daily adding proof that the mass of ore which has filled up the great rent in the limestone formation came up from below, and can, therefore, be relied on in depth. The ore body on the west side of the hill is reported to be of very fair quality in gold and silver, but deficient in lead. It was stated some time back that the ore body in this quarter had the same characteristics as the older discoveries—that of carrying ferruginous ore rich in gold and silver towards the foot-wall, lead taking the place of iron near the hanging-wall. The drifts being started on the footwall

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price of the shares, though the mines are in a position to make good returns during the next season. Blue Tent, 4 1/2 to 5 1/2; the manager reports that the entire ditch will be completed before the end of the current month. The difficult and dangerous task of fluming round Cape Horn has been successfully accomplished, and the company may be congratulated upon finishing such an arduous piece of work. Shares are firm at quoted prices. Oregon (preference), 4 1/2; late advices speak of the very satisfactory way in which the various operations are going on. The ditch and tunnel are making rapid progress towards completion. Some further tests of the gravel have been made with wonderful results, the best pans giving as high a return of gold as the richest in California, and this is saying a good deal.

Cedar Creek, 3 to 4; there is no particular news to hand from this company. The Yankee Tunnel was being pushed on as fast as the nature of the work and shortness of water would allow. The Yankee claim was just showing a better face, the last clean-up being in excess of former ones, so that in all probability the next season will give better returns. Birdseye Creek, 1 1/2 to 2; a letter from the agent appears in another column. The last clean-up left a considerable surplus in his hands, which he intended to use during the winter in preparing for the coming season. The shares have been enquired for, and close steady. Sweetland Creek, 2 1/2 to 3 1/2; the last news from the mines states that washing was being continued with all the water obtainable. It was, however, drawing near to the end of the season. Shares have been steady at quotations.

Foreign Gold Quartz Mines have been inactive. Del Rey stock continues dull at 390 to 400; Don Pedro, 3 to 4; Port Phillip, 3 to 4; Chontales, 3 to 4; Javali, 9-16ths to 11-16ths; Almada Tiritio, 3 to 4; Sierra Buttes, 1 1/2 to 1 3/4; Plumas, 1 1/2 to 1 3/4; Eureka, 1 1/2 to 1 3/4; Independence, 1 1/2 to 2 1/4; London and California, 3 to 4. We stated last week the mill was still idle for want of water—this was an error, as the mill resumed work at the end of August, and it is expected the clear-up would take place on Sept. 30.

Van, 25 to 27; the ends in the 90, both east and west, continue to improve, now worth 60l. per cubic fathom each. The directors have this week declared a quarterly dividend of 14s. per share, free of income tax. Van Consols, 1 1/2 to 2 1/2; the new drawing-shaft is all but completed, which will enable the lead discovered in this part of the mine to be wrought in the most expeditious and economical manner. Great West Van, 5s. to 10s.; the ore-bearing ground under the 34 will very shortly be reached by the drainage of the 46. Pennerley, 1 1/2 to 1 3/4; At Potter's Pit No. 1 winze, sinking below the 65, has improved, now worth 5 tons per fathom. No. 2 winze is worth 3 tons per fathom. Other parts of the mine unchanged. Bog, 3 to 4; fair progress is being made in sinking the shaft below the 175; the lode is full 6 ft. wide, producing lead and blende. No change elsewhere. Wye Valley, 4 to 4 1/2; the body of ore in the 10 fully maintains its former reported value, and the new machinery is probably now at work. Grogwinion, 3 1/2 to 3 3/4; the monthly sale of 70 tons realised the advanced price of 15l. 2s. per ton. South Cwmystwith, 1 1/2 to 1 3/4; satisfactory progress continues to be made in driving towards the rich counter lode.

Great Vor, 3 to 1 1/2; the quarterly meeting of shareholders was held on Thursday, when the accounts brought up to the d. y of the meeting showed a balance against the company of 1959l., including 688l. for which the company is liable on relinquished shares. To pay off merchants' bills and provide funds for the next three months a call of 7s. 6d. per share was made. The agents reported a good lode in the bottom of West Metal shaft, and the Chairman, referring to it, said it appeared that the company was once more on the eve of success. It was determined to erect a pair of Husband's patent pneumatic stamps, with a suitable engine to drive them. This is expected to yield a further profit of 50l. per month from the stuff now lying about the old floors.

Penstruthal, 11s. to 12s.; the very best accounts continue to be received from the mine. At the Penhalls meeting on Tuesday, reported elsewhere, the accounts showed a profit of 136l. upon the quarter's working, and a credit balance of 630l. It was mentioned that in the earlier part of the quarter the tin realised only 47l. per ton, the lowest during nine years; but the last sale of the quarter was made at 52l. 12s. 6d. per ton. At the Blue Hills meeting, on Tuesday, reported elsewhere, the accounts showed a debit balance of 930l., the quarter's operations having resulted in a loss of 170l.

English and Australian, 1 1/2 to 1 3/4; at the date of the last advices all the furnaces at Newcastle were at work, and at Port Adelaide all the roasting and smelting furnaces, except No. 7, under repair. No copper shipments had been made since the date of the last advices, the furnaces having been let out for stock taking. Scottish Australian, 1 1/2 to 1 3/4; the sales of coal for July were 15,197 tons.

Cathedral, 25s. to 30; the hard bar of elvan (which has so much retarded the sinking of the engine-shaft) is part wearing out, and the lode improving for copper ore both here and in the 30 1/2 level west. Subjoined are the closing quotations:

Asheath, 1 1/2 to 1 3/4; Bog, 3 to 4; Carn Brea, 60 to 61; Devon Great Consols, 2 1/2 to 3; Dolcoath, 4 1/2 to 5; East Cranley, 1 1/2 to 1 3/4; East Lovell, 7 1/2 to 8; East Van, 1 1/2 to 1 3/4; Great Laxey, 10 to 10 1/2; Great Vor, 3 1/2 to 4; Hingston Down, 3 1/2 to 4; Marke Valley, 3 1/2 to 3 3/4; Pateley Bridge, 3 1/2 to 4; Parys Mountain, 1 1/2 to 1 3/4; Pennerley, 1 1/2 to 1 3/4; Roman Gravel, 1 1/2 to 1 3/4; Tankerville, 10 1/2 to 10 3/4; Tincroft, 25 to 27; Van, 25 to 27; Van Consols, 1 1/2 to 1 3/4; West Basset, 6 1/2 to 6 3/4; West Chiverton, 15 1/2 to 16; West Tankerville, 1 1/2 to 1 3/4; Wheel Grenville, 2 1/2 to 2 3/4; Almada and Tiritio, 3 1/2 to 4; Birseye Creek, 3 1/2 to 4; Blue Tent, 5 to 5 1/2; Cape Copper, 38 to 39; Cedar Creek, 3 1/2 to 4; Chontales, 3 1/2 to 4; Colorado Terrile, 2 to 2 1/2; Don Pedro, 3 to 4; Eberhardt and Aurora, 7 1/2 to 8; Emma, 1 1/2 to 1 3/4; Flaxstaff, 1 1/2 to 1 3/4; Frontino, 1 to 1 1/2; Independence, 2 to 2 1/2; Javali, 3 1/2 to 4; Last Chance, 3 1/2 to 4; Malpas, 3 1/2 to 4; Malabar, 3 1/2 to 4; New Quebrada, 8 1/2 to 9; Rica, 3 1/2 to 4; Richmond Consolidated, 9 1/2 to 10 1/2; Sierra Buttes, 1 1/2 to 1 3/4; South Aurora, 5s. to 10s.; St. John del Rey, 395 to 400; Sweetland Creek, 2 1/2 to 3 1/2; Tecoma, 3 1/2 to 4; United Mexican, 2 1/2 to 3; South Aurora, 3 1/2 to 4; Oregon (pref.), 4 to 4 1/2; Holcombe Valley, 3 1/2 to 4; New Zealand Kapanga, 3 1/2 to 4; Penstruthal 3 1/2 to 4.

SHEFFIELD.—Mr. J. R. Heard, stock and share broker, in his weekly report says—With the exception of a large business being done on Sheepbridge shares (which have changed hands as low as 16 prem.) other local shares have been almost stagnant. The following are current rates:—Bilbao Iron Ore Company, 46 to 48; Bolekow, Vaughan, and Co., 13 to 14 prem.; Brown, Bayley, and Dixon, 25 to 24 dis.; Charles Cammell and Co., 7 to 6 dis.; Charlton Iron Company, 9 1/2 to 10 1/2; Chillington Iron Company 4 1/2 to 5; Ebbw Vale Steel and Iron Company, 13 1/2 to 13 3/4 dis.; G. and J. Brown and Co., 8 to 7 1/2 dis.; Hopkins, Gilks, and Co., 6 to 5 1/2 dis.; John Brown and Co., 10 to 10 1/2 prem.; 9 1/2 odd lot; Parkgate Iron Company 9 to 10 prem.; Sheepbridge Coal and Iron Company, 18 1/2 to 18 3/4 prem.; 18, 17 1/2, 17, 16 1/2, 15 1/2, 14 1/2, 13 1/2, 12 1/2; Staveley Coal and Iron Company, 52 to 52 1/2 prem.; William Cooke and Co., 16 to 15 dis.; Sheffield Waterworks Company, 95 1/2 to 96; Sheffield Gas Company, 207 to 209.

HALIFAX SHARE MARKET, Thursday.—The following quotations are from Mr. J. H. Thackrah's list:—Halifax and Huddersfield Union Bank, 30; Halifax Joint-Stock Bank, 28; Halifax Commercial Bank, 24 1/2; London and Yorkshire Bank, 28s. 6d.; John Crossleys, 18 1/2; Whitworth and Co., 8 1/2; Elland Gas, 20; Rastick Gas, 18 1/2; Bradford Brick and Tile A. 25; B. 8; Charlestown Brick and Tile, 9 1/2; Ripponden Commercial, 12 1/2; Hebden Bridge Cotton, 10; Yorkshire Boiler Insurance Company, 21s.; Norton Brothers, 8 1/2.

At Swansea Ticketing, on Tuesday, 951 tons of copper ore were sold, realising 16,671l. 4s. 6d. The particulars of the sale were—Average standard for 9 per cent. produce, 103l. 12s. 10d.; average produce, 21 1/2; average price per ton, 17l. 10s. 7d.; quantity of fine copper, 202 tons 2 cwt. The following are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
Sept. 14	1174	104	18 1/2	£14 19 11	18s. 5d.	82 10 6
" 28	951	103 12 10	21 1/2	17 10 7	16 6	82 10 0

Compared with the last sale, the decline has been in the standard 8s. 6d., and in the price per ton of ore about 2s. There will be no sale on Oct. 12.

The Bank of California will resume business on Saturday, Oct. 2. All their outstanding drafts on the Oriental Bank Corporation will be paid on presentation.

AUSTRALIAN CENTRAL GOLD MINE.—The latest advices received by this company are most satisfactory. On July 10 Capt. Angwin wrote that he had just got into the "wash-dirt," and having tried some of it, the result was 3 dwts. to the truck, and he adds, "one-third of that amount would be most satisfactory, as it would give the company good dividends, and would be one of the best mines in the colony. The wash-dirt in face is only at present about 1 ft. thick. We have not struck the main body of wash yet (about 3 ft. thick)." On Aug. 7 he says, "Since my last report we have extended main drive (E. and W.) 120 ft. through payable wash-dirt. The wash in the western drive is 8 ft. thick, with large quartz boulders,

heavy stream of water, and showing gold freely. The wash in eastern drive is 2 ft. 6 in. thick, also showing gold. I opened a blocking drive on Thursday last, and extended same about 6 ft.; wash 2 ft. thick, showing gold. . . I must congratulate you on the prospect of this mine, it never looked so well before." Mr. Gill also speaks of the prospects being "most satisfactory," and he hopes to have the mine in dividend-paying order in a few weeks. The shareholders deserve success for their patience and perseverance.

ANGLO-AUSTRALIAN GOLD MINE.—The news by the mail this week is a little more favourable. From 18 tons of quartz in the prospecting shaft they had obtained 4 ozs. of gold, and they had 14 tons more broken for the mill. Capt. Raisbeck says this stone has improved in appearance, and he intended to put on as many men as could conveniently work. The mine is in a good district, and it is hoped will turn out successful.

NEW CHIVERTON.—The engine-shaft is 4 1/2 fms. below the 35 fm. level, ground favourable for sinking, and the lode indicating a good improvement.

PLYNIMMON.—The new shaft is down 3 fms. below the 24, and in a few days it is expected the lode will come in, when the shaft will be sunk on its course. The agent states that it requires only a little time to bring the mine into a permanent paying state, and that in the interval he hopes to keep up the returns to meet expenses, and probably more.

ROOKHOPE.—Mr. Blenkiron reports that four men are put to drive and break ore in the 15 fm. level at 35s. per fathom; lode worth 1 1/2 ton (21l.) per fathom. Also six men in the 25 at 50s. per fathom; lode worth 2 tons (28l.) per fathom. These men alone ought to give 35 tons per month, and when the 42 is set this quantity ought to be increased.

NORTH LAXEY.—The 121 fm. levels, north and south, are opening out ore ground, and the four stopes in the 110 and 50 fm. levels are worth 10 cwt. to 1 ton of lead ore per fathom. The shaft is being sunk below the 121, and good progress is being made. Since the beginning of this year the company have sold 150 tons of lead ore, for 2336l., or an average of 15l. 11s. 6d. per ton, and, altogether, there have been sold from the mine upwards of 1400 tons, for more than 20,000l. North Laxey is in a good position, with every prospect of being not an unworthy neighbour to the celebrated Great Laxey, the shares of which (15,000) are at 16 1/2 each, besides having paid in dividends nearly 300,000l. In North Laxey there are issued about 12,500 shares, of 2l. each.

RESCUING COLLIERIES AFTER EXPLOSIONS.—The invention of Mr. HENRI FAYOL, of Commeny, Allier, France, relates to apparatus for supporting respiration and light in suffocating atmospheres, consisting firstly of parts which the workman carries with him, such as a respirator connected by a tube to a portable air reservoir, a clip for closing the nose, glasses for protecting the eyes, and a lamp for lighting dark localities. The mouth-piece has branch tubes provided with inlet and outlet valves. The lamp is supplied with air by a tube connected to the portable air reservoir; this is formed as a bellows, and has a branch pipe by which it may be filled with fresh air from time to time. The apparatus consists further of a pump for a continuous air supply, connected to an air condole pipe for supplying the before-mentioned portable reservoir, and also a distributing reservoir having branch pipes to which the respirators and lamps of workmen are connected that are not provided with a portable air reservoir.

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MESSRS. F. W. MANSELL AND CO. (SWORN BROKERS)
are in a position to afford the LATEST INFORMATION from these VALUABLE MINES, and strongly recommend the immediate PURCHASE of the SHARES.
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WANTED, A MAN experienced in the MANAGEMENT of LARGE WORKS, the PURCHASE of MATERIALS, and the SUPERVISION of LABOUR. One having some practical acquaintance with mining operations and chemical manufacture preferred. He will be required to reside in the vicinity of the works, which are situated in England. The proprietors are willing to give a liberal salary and an interest in the profits to a really competent person. Address (previous to forwarding testimonials), with full particulars of experience, to "Proprietors," at C. H. May's Advertising Office, 76, Gracechurch-street, London.

WANTED.—CHEMIST, to UNDERTAKE the ASSAYS and KEEP ACCOUNTS of a SMALL SPECTER WORKS.
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WANTED, on MORTGAGE of a ROOFING SLATE QUARRY, in WALES, producing first-class slates, TWO THOUSAND FIVE HUNDRED POUNDS, at Ten per cent., as working capital, to extend the production and utilise the deadwork already executed.
Apply to R. GERVASE ELWES, C.E., 7, Westminster Chambers, S.W.

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WANTED TO PURCHASE, any PART of THIRTY SHARES, at 28 1/2 cash.
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AN EXPERIENCED MINING ENGINEER, who has been for the last seven years occupied in SPAIN, is desirous of OBTAINING the MANAGEMENT of MINES in that country, or REPRESENTING FIRMS wishing to PURCHASE MINERALS, or NEGOTIATE for MINES. He speaks German, Spanish, and French, and can give the highest references as to his ability and integrity.
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Offers to be sent to Brockley Buildings, South John-street, Liverpool—Office, No. 12.

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ONE WATER WHEEL, 23 feet diameter x 5 feet 3 inches breast (all iron built, with the exception of the arms).
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CAPTAIN ABRAHAM FRANCIS,
MINING AGENT, ENGINEER, AND SURVEYOR,
GOGHIN, ABERYSTWITHE.

Notices to Correspondents.

* Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

WHEAL WREY, LUDCOTT, AND NORTH TRELANWY MINES.—I do not think that the statute meeting (four months from the company's formation) of subscribers hereto has been called. Have the country and town management and subscribers agreed upon anything being done? If the board were to show their real interest in the undertaking by coming forward and taking 5000 or 10,000 shares, and paying upon them like many others have done, the outside public might begin to take up more freely than they have hitherto done. Have not the management any progress to report? It appears strange that so much secrecy should be observed. I hope they will wake up from their slumbering condition. Perhaps active and moneyed men, like Messrs. George Batters and Alderman Sir Charles Whitham, will co-operate with them. —ROYAL EXCHANGE: Sept. 25.

THE DIVINING ROD.—Owing to a pressure on our space, we are compelled again to postpone the publication of "Scrutator's" letter. It shall appear next week.

The concluding article on the Visits to the Manchester Exhibitions will appear in next week's Journal.

SHARE DEALING.—We never interfere in the sale or purchase of shares; neither do we recommend any particular mine for investment or speculation, or broked through whom business should be transacted. The addresses of most of the latter appear in our advertising columns.

Received.—"Reader" (St. Leonard's)—"J. D." (Glasgow): The office of the Grogwinion Mining Company is at 27, Lombard-street—"R." wants the address of the Red Leigh Colliery Company—perhaps some correspondent can send it—"Nemo" (Leeds): Forwarded, as requested—"A. W. P." (Wordsley)—"T. O." "Correspondent" (Wiglington Hall Colliery): The colliery manager is Mr. Robt. Jones, underground manager to Earl Granville—"H. W. P."—"A. T."—"J. J." (Wigan)—"A. Miner" (San Francisco)—"H. W. P."—"A. T."—"J. J." (Bristol)—"R. S." (Truro): Next week.

THE SUPPLEMENTARY SHEET.—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the Mining Journal to many countries will be reduced to one fourth. Henceforth the subscription will be 12. 6s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Servia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 12. 10s. (50 frs.)

AVIS IMPORTANT.—AUX ABONNÉS ÉTRANGERS DU "MINING JOURNAL."—A cause de la nouvelle CONVENTION POSTALE il y avait, à partir du 1^{er} juillet 1875, une grande diminution du prix de l'abonnement du Mining Journal pour bien des pays dont le taux des postes était jusque là bien élevé. À partir du 1^{er} juillet le prix de l'abonnement est de 39 frs., le port compris, pour l'Autriche, Belgique, France, Danemark et ses dépendances, l'Égypte, l'Allemagne, la Grèce, l'Italie, Hollande, Portugal et ses dépendances, Roumanie, Russie, Serbie, Suède, la Suisse, la Turquie, l'Afrique septentrionale, etc. Le montant, si l'on le veut, sera touché à domicile, la fin de l'an. L'abonnement continuera sauf avis contraire.

THE MINING JOURNAL,

Railway and Commercial Gazette.

LONDON, OCTOBER 2, 1875.

THE WORKING OF COAL.

We offer no apology for again taking up the question of the safest and the most economical method of getting our coal after the seams have been reached, and when manual labour is employed, for although we have been able to point out as a healthy and progressive sign that in some districts many of the miners have refused to work with powder, yet the subject will have to be much debated before those views are so generally held and acted upon as is desirable in the interest of safety, and in not a few instances in that also of economy. The question is not confined to the preventing of explosions. To save their own labour, colliers have long been too ready to use powder, even when there has not been immediate risk, and managers of pits have been unable to restrain them, though it may have been that valuable property has been greatly deteriorated. A miner of great skill and experience, familiar with the particular seam in which he is working may use gunpowder with a minimum of injury to the material as an article of commerce, yet a miner of limited experience, or one working in a strange mine, is too apt in making his "vantage" to destroy as well as displace. There are few mines in which gunpowder is not, under the present mode of working, deemed to be requisite, and where it is not used to some extent in the driving of headways and roads, and during the prosecution of the workings in cramped places. We will not stop to enquire whether much of the loss by falls of roof—so much more destructive of life than explosions—is not in great part attributable to the shattering influence of blasting, or to consider if there are not evidences of roads and headways driven by the use of the wedge so compact in even the same seams as virtually to demonstrate this. We go on to remark that colliers cannot always be under the supervision of the manager, whereas the temptation to ease his work by the use of gunpowder is always present, and when loose powder could be used the explosive was seldom absent from his side. A collier might take it into the pit without being observed, and availing himself of his opportunity might there use it with the chance of his doing so remaining unknown. Happily the requirements relating to cartridges throw impediments in his way; he cannot always buy cartridges, and they are troublesome to him to make. Still, the waste goes on.

Where there are thin laminations of hard stony substances passing irregularly through the coal seams, or where the cleavage of the coal is imperfect or ill-defined, many colliers still almost demand to use gunpowder, and the demand is not always restricted to its use in those pits where its use would be attended with only the minimum of risk. The new Acts and the General Rules have aimed at the safety of the collier during the time he is at work, and colliers' representatives, knowing the danger to which he is exposed by the undue use of powder, have taken the subject up. "Protection for the poor collier" is an appeal not without its fascination to the British public, and though a good deal of nonsense is often talked upon it, yet we would not have it a theme which should at any time fail to awaken interest—since, to say the least, it shows the existence of a sympathy truly British with a toiling class of our fellow-subjects, to whom the whole kingdom owes much. A topic having so many elements of popularity did not, as our readers know, escape the attention of Mr. MACDONALD at the late Conference of the miners at Leeds, when he gave the prominence that it merited to the resolution that the use of powder in fiery mines should be prohibited. Now, there are few coal mines which are entirely free from explosive gases. They may be free at one time or in one part, but not in another, and many colliery owners and managers know only too well how treacherous to the miner is the confidence that you are free from explosive gases. The roads and the working places may be free, whilst in the goafs and the wastes magazines of it may be accumulating, which any accident might open and bring into contact with the kindling flame of a spent shot, of a naked light, or even of a protected light if its fire should be accidentally exposed, or the gas should be sent on to the lamp by a forceful air current.

Seeing that the risks from a sudden outburst of gas are so numerous in ordinary working, it is not surprising that Mr. MACDONALD should have striven to protect the colliers from the hazards which they ought not to run, and which ought, therefore, to be avoided. So long, therefore, as the irregularity with which gas reveals itself continues the prohibition, unaccompanied with a definition of what is a fiery mine, would go far to wholly preclude its use. Of this, as we know, only too many of the colliers whom Mr. MACDONALD would serve availed themselves in their wish to have left to them a means of dislodging the mineral from its natural bed, of which they have hitherto made abundant use. The tactics which led to the postponement of the debate at Leeds are still being employed in different mining localities where the question has been since revived.

It is, consequently, in every way unfortunate that the men who hold their lives so cheap as not to care that they should be protected at the expense of extra toil should have received such powerful encouragement as is contained in certain officially expressed views by Government officers. We repeat here what we shall probably have occasion again to repeat—that all the difficulty about definition would be removed by the adoption of the line which we have laid down as marking the limits of safety. Gunpowder should be prohibited where it is necessary to use lamps. Nevertheless, by only too many colliers throughout most of the fields where the seams are narrow, or where the flinty beds run in amongst the coal seams, or in the hundred and one instances in which for years past they have been carrying on a sort of running fight with the managers for the right to use gunpowder whenever they pleased, the same contest is maintained. We venture to suggest, however, that the discussion has arrived at a stage at which it cannot remain stationary. The debate has only been opened, and if the leaders of the men are worth the name they will be guided by the light they have upon this matter, and the altered views which we have before pointed out as coming over the minds of some working colliers will steadily increase. We shall be mistaken if what we know is now going on in the colliery districts will not by-and-by show that the subject is steadily progressing to a stage at which arrived it will reflect a little less discredit upon a people who have ever been the foremost coal miners in the world.

OUR EXPORT COAL TRADE.

The comparatively low prices which are now prevailing for coal—although a member of Parliament who addressed his constituents the other day in the extreme West expressed doubts whether coal would ever descend again to its old rates, and counselled economy accordingly in its use—have told at once upon our coal exports, which rose to Aug. 31 this year to 9,277,268 tons, against 8,910,616 tons in the corresponding period of 1874, and 8,309,571 tons in the corresponding period of 1873. Notwithstanding the progress which is undoubtedly being made in the utilisation of the general coal resources of the world, the demand for our coal is greater than ever among our neighbours and colonists, taking matters as a whole; and at the present rate of exportation, we shall send abroad 13,915,947 tons this year. This total will compare as follows with the exports of the previous 19 years:—

Year.	Tons.	Year.	Tons.
1856	5,879,779	1866	9,953,712
1857	6,737,713	1867	10,415,773
1858	6,529,483	1868	10,837,804
1859	7,006,949	1869	10,588,425
1860	7,321,832	1870	11,702,440
1861	7,555,115	1871	12,747,969
1862	8,301,552	1872	13,198,494
1863	8,275,212	1873	12,617,503
1864	8,809,908	1874	13,908,958
1865	9,170,477	1875	13,915,947

The total set against 1875 is, of course, an approximate one, and the last four months of the year may materially modify the figures for the twelve months; still the fact appears to be tolerably well assured that the exports of the current year will be on a heavy scale, and probably on a heavier scale than in any preceding twelve months. This is due, no doubt—first, to the return to comparatively reasonable rates for coal; and, secondly, to the constant growth and progress of steam-power and steam-impelled industries, which march on at a rate with which both British and foreign coalowners find it no easy matter to keep pace.

This progress of steam power has been one of the most remarkable features of modern French industrial life. The extraction of coal in France is now approaching 20,000,000 tons per annum, one important new coal field having been opened out in the last 20 years, while in all the other French coal mining districts the extraction must be said to have received a remarkable impetus in the same period. During the last 30 years, France has passed through at least two formidable revolutions, but, in spite of conditions little calculated to encourage the development of their manufacturing industry, the French have been ever calling steam power more and more to their aid; and the consequence has been that the progress of French coal extraction has failed to keep pace with the extension of French steam power, and the French have been fain, accordingly, to invoke the aid of more and more English coal. Twenty years since the French chafed, or affected to chafe, under an annual importation of 1,000,000 tons of coal from Great Britain. Class journals attacked such an importation in leading articles, and Ministers of the Interior deplored it in circulars to Prefects. But this official and semi-official wrath was expended in vain. Since the close of their struggle with Germany the French have been continually taking more and more of our coal. In the first eight months of 1873 we sent them 1,580,710 tons; in the first eight months of 1874, 1,531,209 tons; and in the first eight months of 1875, 1,752,733 tons. At this rate our exports of coal to France have now attained an aggregate of somewhere about 2,600,000 tons per annum, or 50,000 tons per week, and it is doubtful even now whether they have yet acquired the full importance which they are destined to assume. In Germany, again, we also witness a remarkable development in the consumption of our coal. To August 31 this year the Germans took our coal to the extent of 1,418,191 tons, while in the first eight months of 1873 our coal exports to Germany did not exceed 1,077,680 tons. It will be seen that the Germans have been taking our coal this year at the very substantial rate of 2,100,000 tons per annum, although in Germany, as well as in France, coal mining has of late years achieved undoubted progress.

COAL FIELDS OF NEW SOUTH WALES.

The report from the Examiner of Coal Fields—Mr. JOHN MACKENZIE, F.G.S.—on the condition and prospects of the coal fields, together with the reports of the Inspector of Collieries on the state of the various coal, petroleum oil, canal coal, and kerosene shale mines in New South Wales, and accidents therein for the year 1874, are particularly interesting, since they show that the output of coal continues to increase, and that 1,293,400 tons of coal were raised with the loss of but five lives, and with only 13 non-fatal accidents. There were 23 collieries raising coal, and three getting petroleum oil and canal coal; and the aggregate production of coal from these collieries in 1874 was 1,293,400 tons, valued at the sum of 786,152. 17s. The aggregate production of petroleum oil shale in 1874 was 12,100 tons, valued at 27,300. Mr. MACKENZIE points out that the returns show that the New South Wales coal trade is yearly increasing in a most satisfactory manner, and has never been in such a prosperous condition as it is at the present time. Many new companies have been formed, as well as very large areas of coal land taken up, in various parts of the colony, with the intention of working the coal from under it. He considers that if the rapidly increased demands for their coal could have been foreseen a few years ago, and the shipping facilities at Newcastle had been greater than they now are, they would have had a much larger production and demand to report, and when the extra wharves and cranes now in course of erection at the Newcastle Harbour are completed there will be a very much larger foreign demand for New South Wales coal. The agreement entered into by the associated masters and the officers and delegates of the Coal Miners' Association of the Hunter River district, by which the wages paid for hewing coal and other work usually done by the miners, the hours of labour to be observed at the different collieries, and the mode of settling any disputes that may arise in reference thereto, are to be arranged, is working well, and there is no doubt about its having been the means of keeping the price of coal at 14s. per ton, delivered in vessels in Newcastle Harbour. He is now preparing for the Philadelphia Exhibition plans showing the position of the different collieries in New South Wales, with the outcrop of the seams of coal thereon. Also sections to illustrate the thickness of the seams of coal and the part worked in all the principal coal mines, as well as the longitudinal section of the lower coal measures near Stroud, in which there are sigillaria, stigmara, &c.

Referring to the present state of the mines, the Inspector, Mr. THOMAS LEWIS, reports that, notwithstanding the improvement in the general ventilation of the larger collieries, there is yet ample

room for still further improvement, more especially in the division and circulation of the air currents into and through the inner workings in the mines. The fatal accidents were three from fall of coal and two from fall of roof. The non fatal accidents were—six from fall of coal, one each from fall of stone, roof, and prop, one from a shot-hole explosion, and three from unenumerated causes, of which one was a simple leg fracture through jamming between two empty skips, and two broken jawbones, the two assistant borers being struck by the springing lever of the machine. At the Wallsend Colliery there were one fatal and three non-fatal accidents; at Borehole Colliery, the same; at New Wallsend, two fatal; at Anvil Creek, one fatal; at Waratah, four non-fatal; and at Osborne Wallsend, New Lambton, and Mount Pleasant, one non-fatal at each.

ROCK BORING MACHINERY, AND BRAIN'S BLASTING POWDER.

At the late meeting of the German Mining Engineers, held at Aix la Chapelle, Prussia, the "Darlington Rock-Borer" and "Brain's Blasting Powder" were exhibited. From the "Bergeist" we extract the following particulars:—

The DARLINGTON ROCK-BORER, which was tried some time ago at Altenburg with very satisfactory results, was taken to pieces, and its parts and construction clearly shown. As it has been fully described in a pamphlet published by Dr. Ad. Gurlt, of Bonn, we shall only remark that the machine is the simplest yet invented. It has neither valve, tappets, striking gear, or rods, but the distribution of the air or steam is effected by the working piston alone, which, as it passes portways formed in the cylinder itself, opens and shuts them alternately. The construction of the Darlington borer allows the piston to travel at a very high velocity, perhaps higher than that of any other machine. This borer is steadily finding its way into Germany, and, among other places, is in operation at the Bilslein Iron Mines, near Dillenburg, and at Königgrube, in Upper Silesia.

BRAIN'S POWDER, a new explosive, is the composition of Mr. W. Blanch Brain, of St. Annals, Cinderford, Gloucestershire. This powder contains 60 per cent. of chlorate, nitrate of potash, and charcoal, and 40 per cent. of tri-nitroglycerine, having a specific gravity of 1.60. This powder was made into cartridges of 2 ozs. weight, by the Messrs. Krebs, of Cologne. A piece of boiler plate $\frac{1}{2}$ in. thick, with one cartridge, and another plate $\frac{1}{2}$ in. thick, with two cartridges attached, were taken. When the powder was fired it was found that its strength totally destroyed the first plate, and broke the second into pieces. In a second experiment a bench of limestone 30 ft. long, 20 ft. high, and from 6 to 8 ft. thick was perforated with six holes, each about 5 feet apart and 5 feet deep. In these holes 32 cartridges were placed, and electrically fired. The result was that the entire bench of stone was cleared away, and the rock shattered for a considerable distance around the locality of the explosion. More than 3000 cubic feet of stone were removed by the strength of this powder ignited instantaneously by the electric spark, and clearly showed that Brain's blasting powder possesses from 25 to 30 per cent. more explosive power than a similar weight of dynamite. Subsequently, Mr. Engels, of the firm of Messrs. Krebs and Co., made trial of Brain's powder at the Adrian Basalt Quarries, near Obercassel, when the enormous strength of the powder was further exhibited.

Since Dynamite and Lithofracteur have been known the basalt rock has been broken without the assistance of bore-holes. In the basalt it is found that the hardest borer steel is soon blunted, making the breaking of the rock by means of bore-holes a very costly operation. The explosive is laid at the back and top of the stone, and is covered with wet clay, and fired. In a similar manner Brain's powder was used on a bench of basalt, and with 5 lbs. 200 cubic feet of the rock was entirely removed. This charge was, however, seen to be much too strong, and in a fresh experiment 2 lbs. of Brain's powder readily removed 180 cubic feet of the rock. Large blocks of hard basalt with 4 ozs. of the powder, covered with wet clay, were readily broken into pieces. The various trials showed very clearly that for the miner and quarryman a new and exceedingly powerful explosive had been successfully produced.

SULPHUR MINING IN ITALY.

In the many pictures that so frequently have been drawn of Italy by enthusiastic tourists and travellers the public has been favoured with glowing descriptions of its great natural beauties, its picturesque and sublime lakes, valleys, and mountains, as well as the matchless treasures that are to be found within its old cities, so rich in historical associations, but we seldom or never find any allusion made to its productive power as a mining or manufacturing country. Yet from the volcanic character of some parts of Italy there are, as might be expected, very large and valuable deposits of sulphur, which are now being more extensively worked than they have ever been, as well as some good anthracite coal, which is used on the Italian lines. With regard to the former, however, some of the mines where it is raised are in the hands of English capitalists, who are opening out on an extensive scale, although considerable difficulties have to be encountered. In some instances shafts have to be sunk, and ventilation secured, for the sulphur mines give off a considerable quantity of gas. This is the case with respect to a mine at Ghibiline, about six miles from Rialmonti, in Sicily proper, a notice of which we have just received from a former contributor to the Journal, who is now one of the managers of it. The mine, as well as most others, has been worked in a most primitive manner by the natives, and although there is plenty of sulphur the output has been very moderate; but this is now being changed by English managers, who are bringing to bear on the work the best known appliances which they have been familiar with at home. The sulphur at present is raised by means of adits, but they are about to sink a shaft in new ground, and so raise the ore and pump out the water by means of suitable machinery, and to connect the main adit with the shaft for ventilating and other purposes. This will, of course, add very largely indeed to the production. The system of working is also being changed, and as the native mode of working may be interesting we will briefly notice it. The pickman, or pickmen, are, as a rule, a fine class of men, of medium height, light and wiry built, giving indications of strength and endurance. They are civil, and moderately temperate, whilst their food consists principally of black bread, generally eaten with an indigenous kind of cucumber without dressing. The dress of the men is rustic and scant, and their homes as regards cleanliness and comfort would not vie with an ordinary English stable.

Such is the Italian miner in his present condition as he is to be seen at his home, such as it is. The men are regular in attending to work, and get through a good deal, considering the tools they use, which in all probability are the same as were those handled generations ago. The pick is in the form of a wedge, having a stick at one end, and passing through the other for a handle. Spade or shovel they have none, the implement used instead being in the form of an adze, about 12 in. long and 6 in. broad, and with this they remove refuse or fill baskets. In seeking for sulphur the miners generally select the side or the top of a hill, and dig down at an angle of at least 45°, and at times almost vertical, making steps as they proceed to a depth of from 100 to 200 yards. Up these steps boys of from six to sixteen years of age carry all the sulphur ore and rubbish, as well as the material required by the men in and out of the place. This they do in bags, which are strapped over the foreheads, somewhat similar to what used to be done by women and children in the Scotch coal mines. At some of the mines from 100 to 140 of these little fellows are employed, and they work with great energy, their loads varying from 50 to 100 lbs. in weight. Generally they convey to the surface from 12 to 15 tons of stuff daily. When the sulphur ore is raised it is smelted in the ordinary manner, then run into moulds, and formed into blocks a little over 1 cwt. Two of these blocks are a load for a mule or donkey, and it is nothing extraordinary to see from 50 to 60 of these animals being loaded at a time, and these may be termed mineral carriers of Sicily, or, indeed, the general carriers, for they convey everything to and fro through valley and over mountain, making their own roads as they go along for distances varying from 8 to 20 miles or more.

The drivers are much the same as most of our own, for they show but scant mercy to the brutes. At the surface a considerable number of little boys are employed in removing dirt, and in taking the ore to be burnt, for which they have wicker baskets, with a strap for the forehead and a pad on the shoulder, and at this work they continue from sunrise to sunset, their only food being the black bread of the country and water. At Ghibilini about 120 of these lads are employed, and they work in an almost nude state without scarcely ever resting. Although the mines give off carbonic acid gas in considerable quantities as well as damp, and are very warm, at times almost suffocating, yet the ventilation is very little thought of, for there being no Government Inspectors to interfere self-interest is the order of the day, and system and safety are left to the future, when rules and regulations may be established for the working miners by the paternal Government of Italy. Safety-lamps, such as are used in England, would be a novelty indeed at Roccamonte, but would not meet with any patronage, seeing that the miner in that district has a lamp of his own invention, and a very simple one it is, as well as inexpensive. It consists merely of a piece of burnt clay in the form of a saucer, crimped on the edge, and on it they place a little cotton wick and some olive oil, and this is the light used by man and boy. Now, however, that English capital has found its way into Sicily a very great change must be looked forward to by the introduction of engines and improved machinery, and the newest mining appliances. Already roads near to Roccamonte in connection with the mines are projected, and there is already a single line of railway partly constructed from Ghirgenti to Roccamonte.

From this description of mining in Italy it will be seen that the miners in England live in a princely fashion as compared with their Italian brethren. The former may not have so fine a climate, but they can be free from the swarms of vermin—including bugs, fleas, flies, snakes, and grasshoppers—which abound in Sicily, and appear to be almost looked upon as having a right to be cultivated. But there are other things which are far from agreeable at Ghirgenti, for at no great distance from it there are those lawless bands called brigands, or robbers, so that the English managers, as well as the overmen, and others as well, are obliged to be at all times armed with revolvers, so as to be ready for any emergency, either from those who are intent upon spoil or have a grudge that can only be settled by the pistol or the knife. But no one flinches from his duty, which is by no means so pleasant as it is in the mining districts of England. Yet a better state of things is looked forward to as the social position of the workmen is improved, as they come to see from the example of the Englishmen connected with the Italian mines what is to be obtained by perseverance, knowledge, and industry, and how easily their families and their homes may be made comfortable.

MINERAL STATISTICS OF VICTORIA, 1874.—From these statistics we find that the gross yield of gold for last year is less than for 1873, but the average per man per annum is much larger than it has been for years past. The yield at the great depths that have been reached—800 ft., or more than 190 ft. below sea level—has been over 3 ozs. per ton. This magnificent result should give encouragement to the gold miners of other British colonies, especially Nova Scotia, where little has been done beyond scratching the surface.

DYNAMITE EXPERIMENTS.—Some interesting experiments reported in another column of this day's Journal, were made in the neighbourhood of Dudley a few days since, with a view to show the advantage of dynamite for blasting in coal as well as in hard rock. The experiments were conducted by Mr. John Shepherd, dynamite instructor in the employ of the British Dynamite Company, and went off most satisfactorily. In the Rowley ragstone a hole 4 ft. deep and 1½ in. diameter was put in to undercut the bottom in order to make room for the next shot, which consisted of ½ lb. of dynamite in a hole 7 ft. deep and 1½ in. diameter, and brought down some 50 tons of stone. In the trial in coal, a "man-of-war," 30 ft. in circumference and 6 ft. high, was removed with 1s. 8d. worth of dynamite, which would have cost 15s. to remove by hand. After the experiments, Mr. Thos. Johnson, the Midland agent for the company, read an interesting paper in the manager's office, at the Lye Cross Pit, Oakham, on the "Composition, Utility, and Safety of Dynamite," in which he stated that there were now 14 dynamite factories in various parts of the world, and that since the opening of the first factory, in 1866, not a single accident had ever taken place with dynamite either during carriage or storage, though 12,000 tons of dynamite has been manufactured.

NOVEL QUARTZ MILL.—An improved and entirely novel quartz-crushing machine has been invented by Mr. Stephen Kendall, and exhibited at the San Francisco Mechanics' Fair, and will no doubt come largely into use as a substitute for the old and cumbersome Cornish stamps. Two ordinary mortars are placed in a frame a short distance apart. Between these two swinging frames are suspended by a journal on the rock shaft. The stamps are joined to the swinging frame, the cams being arranged in the usual manner in the cam shaft, and the power is applied by the usual pulleys. The whole arrangement is supported on standards, which also carry the rock and cam shafts. The shoe and die are similar to those used in the ordinary mortar. Each end of the stamp shaft is supplied with a shoe. When the power is applied by steam, horse, water, or hand power the cam shaft rotates. The cams strike the tappets, on the opposite sides alternately, of the oval frames, throwing them to and fro, producing a swinging motion, which causes the stamps to alternately strike in the mortars. Thus one rotation of the cam shaft makes the stamps strike a blow in each battery, so that the two stamps make really a four-stamp mill. With four stamps an eight-stamp battery is made, and so on. It takes very little power to operate the machine, and there is no extensive frame and complicated machinery about it. It is quite compact, and its weight and cost as compared with the old-style mill doing the same work is much cheaper. It appears that a four-stamp mill of this design can be put on a wagon-frame and all, and set to work within 24 hours of reaching its destination. The inventor's object has been to provide a practical and cheap mill which will answer the purpose of working miners with little capital. A four-stamp mill occupies but 7 ft. by 3 ft. 6 in. and 3 ft. high, is entirely self contained, and can be made in small pieces so as to be packed on mules.

COAL AND IRON IN THE UNITED STATES.—English rails are quoted at New York at \$48 to \$50 per ton, gold; American rails, at the works, at \$50 per ton, currency. The production of anthracite coal has been carried on with great activity of late in Pennsylvania; the aggregate production to Sept. 4 this year was 12,340,665 tons, against 13,086,228 tons in the corresponding period of 1874. The decrease in the production this year occasioned by a five-months suspension of working operations will be seen to have been now narrowed to 745,563 tons, and the adverse figures will probably soon disappear altogether. The J. Edgar Thomson Steelworks, at Braddock Fields, Alleghany county, Pennsylvania, have now been formally opened; their annual productive capacity is 400,000 tons. The plate mills of the Abbott Iron Company, of Baltimore, are now in operation, and it is expected that the company's rail mills will shortly resume work. The Harrisburg Steelworks recently shipped 25 carloads of steel rails to the Central Railroad of New Jersey.

COPPER MINING AT LAKE SUPERIOR.—At the Calumet and Hecla annual meeting, held at Boston, the actual net surplus for the year ending April 30, 1875, was shown to be \$1,822,117. The surplus for 1874 was \$1,853,545. The amount of copper smelted within the year was 20,704,783 lbs., which represents the actual product of the mine. It is estimated, from the best obtainable data, that the actual cost for producing this amount of ingot copper was 12-72 c. per lb., equal to \$2,633,979-47. The amount of copper actually sold within the fiscal year, April 30, 1874, to April 30, 1875, was 20,247,462 lbs., at an average of 20-54 c. per lb., realising \$4,160,729-16. The company employs 2500 men, the monthly pay-roll amounting to \$90,000, a village of 5000 people deriving their support from employment furnished by the company. The mine is at present worked to a depth of 1400 feet, the yield of the ore averages 5 per cent. of pure copper, the vein being 15 ft. thick. The mine was discovered in 1845, operations were first commenced in 1867. Since the Calumet and Hecla Mines were united, in May, 1871, there has been paid out to stockholders the immense sum of \$8,100,000, and during that time the stock was doubled without cost to the owners. The property now, at \$158-50 per share, is worth

\$12,680,000. The amount paid in by the stockholders was \$1,200,000. The present yearly dividends, amounting to \$1,600,000, are divided quarterly among the stockholders of the company.

REPORT FROM CORNWALL.

Sept. 30.—The rise in the tin standard, which took place last week while our report was being penned, was hardly, perhaps, up to what ought reasonably have been anticipated when the unofficial figures were taken into account. In fact, it did not bring the standard quite up to the mark of what in many instances had been paid. Our smelters are cautious people, and perhaps after all it is better to be slow and sure. Too rapid a rise would very soon make matters as bad as ever.

The course of mine management is by no means always given to run smoothly, and the somewhat stormy meeting at Wheal Pevor was speedily followed by the uncomfortable meeting at South Carn Brea, where Capt. Rich, as manager, had taken the unusual step of giving the engineers, Messrs. Hocking and Son, notice to quit without first consulting the adventurers. The chief point at issue was whether the manager had such a power. The general feeling of the meeting appeared to be that he had not, and there was a careful abstention from doing anything which might appear to sanction that principle. Nevertheless, there was no formal resolution to that effect, and the knot was rather cut than untied by Messrs. Hocking tendering their resignation. Is it to be understood that in future, when a manager and engineer disagree—we leave altogether out of sight the grounds of disagreement, which have nothing to do with the principle involved—all that the manager has to do is to give the engineer notice, legally or illegally, and that it will be then suggested that, as they cannot pull together for the future, the best thing for the engineer to do is to tender his resignation? That appears to be the lesson taught by the proceedings at South Carn Brea; that the questions which had arisen were fitting ones to be brought under the notice of the adventurers is quite another matter, and has really nothing to do with the special point raised.

Honour was done where honour was well due on Tuesday, by the presentation of a silver salver and claret jug to Mr. G. K. Cartwright, late agent of the Tehidy Estates, on his leaving Cornwall to take up his duties as agent and receiver of the Duchy of Lancaster. Mr. Cartwright carried out his important functions as steward of the extensive properties of Mr. Basset with thorough fidelity to his principal, and at the same time with every consideration to adventurers and miners alike, and his loss will be deeply regretted. In his case a testimonial is no mere empty form. We are glad to find that in Mr. Boulden Mr. Cartwright is likely to have a worthy successor.

"Out" writers generally make some blunders when they deal with Cornish mining, and a writer in that uncommonly smart paper, the *World*, is not free from that imputation. Commenting upon the statement that 10,576 emigrants left Cornwall for Australia during the first six months of the present year, besides those for Canada and America (he takes no heed of the returns), the writer says— "Emigration is still going on, and would go on faster were it not that so many of those who are left have no money to pay their passage. With tin at not much over 80s. a ton, no wonder nearly a quarter of the Cornish mines have ceased working, and the rest are only doing just enough to 'keep going.' Of course everything suffers for the want of repairs, and the iron and timber trades are suffering. Altogether Cornwall has never looked so bad since the distress of eight years ago, when the relief fund was raised 'to keep the miners from starving.' Then, in 1866, the price was 88s. per ton; the next year it rose to 92s., and went on rising till in 1872 it reached the excessive price of 153s. a ton. Of course plenty of bubbles were started, and during the last three years a good deal of money 'from upwards' has been sunk in Cornish soil. John Bull always vows in times of depression that he'll never take a mine again, but when the price comes he is always caught just in the old way. Will the rise ever come again for tin? That depends on whether Australia and Van Diemen's Land can go on supplying the world at present prices. It might be as well to telegraph to Mr. Anthony Trollope on the subject. Meanwhile the miner suffers—already there is a good deal of distress; and some in West Cornwall are talking of a short Waste Lands Bill to enable (or compel) 'lords' to 'improve' the numerous commons. They could not have better workmen than the miners; for a man must be used to blasting or getting out stone, or he'll make but a poor hand of a West Cornish common."

There is a good deal that is true in this, and something that is new; but it frequently happens the new is not true, and the true not new. We in the West here have a kind of idea that instead of the distress now becoming manifest, it is passing by; and, instead of asking if the rise for tin will ever come, we are congratulating ourselves that it is here. As to the waste lands, that is a very old story, and it is pretty evident that the *World* knows little of what has been done in that direction, for in spite of the praise bestowed upon the miners of the immense improvements that they have effected. The *World* is behind the times in its information.

Mr. Nicholas Kendall, who while member for East Cornwall did such excellent service to the mining interests of the county, has resigned the post of police magistrate at Gibraltar, which Mr. Disraeli conferred upon him seven years ago by way of consoling him for the loss of his seat. Mr. Kendall is getting on in years, having been born in 1800. His position at Gibraltar had long been a rather unpleasant one, since some Spaniard had vowed vengeance against him, and it was unsafe for the magistrate to go outside the British lines.

So far the working of the Great Perran Iron Mines, which were to have transmitted 1000 tons of iron ore a day—300,000 tons a year—over the Cornwall Minerals Railway has proved a failure. We are, however, assured that they will yet be worked on a large scale. The office furniture, extensive laboratory, and chemicals, fitted up for the nicest manipulations, regardless of expense, were all knocked down at auction for a comparatively small amount. The iron ore mining, however, will yet be resuscitated, and the expenditure already incurred be found profitable.

REPORT FROM THE FOREST OF DEAN.

Sept. 29.—Encouraging symptoms have shown themselves in the Forest since the last printed report from the district, at all events on the eastern side of the Forest basin. We allude, of course, to the improvement of the Coal Trade in the district, most of the pits on eastern side of the Forest being in a comparative state of activity, though not to the full capacity of output, as were a higher market pressure brought to bear a larger quantity could be cut and brought to bank than is now being produced. However, it is a pleasure to be able to say that good average work is now the rule at the leading Forest pits, although duty compels us to add that the improvement is not so marked or general on the western side of the Forest. As a rule, the pits on the western side of the Forest are less important, and employ fewer hands, than the collieries on the other side, several of them being rather small, and in some cases are more readily affected by changes in the market, especially by a downward tendency of prices, and possibly by a limited capital at command, so we rather frequently hear of difficulties in connection with them cropping up generally with the workmen opposing some attempt to a reduction of wages, though occasionally from other causes. Fryer's level is reported at a standstill, and slack work at some others on the western side. Still, although the principal improvement has occurred on the eastern side, it has extended more or less throughout the Forest. The men at one small pit have submitted to a 10 per cent. reduction, and the tin-plate workers at Parkend, to secure a resumption of work, submitted to a 5 per cent. reduction. It is understood that the Crawshays are well pleased with their purchase of the Parkend Works, and would not take a small percentage for the transaction; and although it is believed that the new firm will put new life into the concern, and work the matter successfully, yet many cannot refrain from expressions of regret that the old company saw it necessary to part with the property. Too long contracts, except upon very advantageous terms, are apt to end disastrously. We hear of little local change in the iron mines as to employment, or of blast-furnaces doing extra work. Prices of local produce, we believe, have recently undergone but little change.

We are much pleased to record the opening of the Severn and Wye Railway, from Lydney to Lydbrook. The tramway, which this line superseded, was constructed early in the present century, and did good service in its day, but a few years ago (in the teens of years now) an attempt was made to get a railway, and since then powers have been obtained for laying down a line, and then additional powers were sought in various sessions of Parliament, until the company's works have now extended considerably beyond the original plan, and the through line from the Great Western (South Wales) Railway at Lydney, to a junction with the Ross and Mon-

mouth line by the River Wye, near Lydbrook, some 12 or 13 miles at least. Its stations are Lydney, Whitecroft, Parkend, Speech House road, Drybrook road (for Drybrook, Cinderford, and Bilton), Lydbrook, and Lydbrook junction. We may add, however, that both Lydney and Lydbrook have two stations each, Lydbrook being a long village, and Lydney having one at the town besides the junction with the South Wales line at the station belonging to that line. The opening of the Severn and Wye line is an event of considerable importance to the district, as the residents of the Forest interior feel, in consequence thereof, that they are as the residents of the amenities of modern civilisation, as heretofore we have felt very much as if we were shut nearly out of the modern world in some *ultima thule*, but now are so much nearer to modern life. And when all the promised lines and branches intended for Forest outlet and accommodation are completed the Forest population will be brought abreast of the age as to the means of locomotion and other modern necessities, but not till then. And if the Crown officials, and all others who are mainsprings in Forest of Dean interests, could also be rightly revolutionised within the next five or seven years, we could reasonably look forward to the speedy arrival of the Dean Forest millennium.

REPORT FROM LANCASHIRE AND CHESHIRE.

Sept. 30.—The state of the Coal Trade has not changed since last report. In superior classes of house and engine coal a good amount of business is being done, but there is much competition and much underselling in all kinds, and especially in poorer sorts. There is not much doing in the shipping trade, and generally the demand is far below the supply. To-morrow some slight reductions of rates will come into operation. In the West Lancashire district prices are quoted as follows at the pit:—Good slack, 4s. to 5s. per ton; bungy, 6s. to 7s.; common coal, 8s. to 9s. 6d.; Pemberton (4 ft.), 10s. 6d. to 11s.; Arley, 12s. to 13s. The reduction in East Lancashire has amounted to 10d. per ton for furnace fuel and house coal (land sale), and 5d. for bungy and other inferior qualities. The Iron Trade shows no sign of improvement, and there is no alteration to notice.

Mr. Dickinson, H.M. Inspector of Mines for East and North Lancashire, instituted at the Morley Petty Sessions, last week, proceedings against Mr. John Sharples, manager of the Mill Pit, Duxbury, near Chorley (belonging to Mr. T. Whittle), for breaches of the Mines Regulation Act. There were two informations, the first being that the defendant did not, in accordance with the 7th general rule, appoint a competent person to examine the safety-lamps before going into the mine, and the second that he did not comply with the 1st general rule, and produce adequate ventilation to dilute and render harmless certain gases in the mine. Mr. Holden, of Bolton, appeared for the Inspector, and Mr. John Stanton defended. On the 9th ult. there was a serious explosion of fire-damp at the Mill Colliery, causing injuries to four men, two of whom died subsequently from the hurts they had sustained. The books required to be kept in the mine showing there was gas present indicated such to be the case in June, July, or August, but nothing was done to make it harmless in the way of increase of ventilation, and on the morning of the explosion the mine was being worked with naked lights to some extent. The lamps that were in use in the mine were unlocked, and the Government Inspector pressed, therefore, for the highest penalty of 20l. Mr. Stanton said that Mr. Sharples admitted there was an error on his part in not attending to the safety-lamps, and ordering them to be locked when gas was reported, but he pleaded for a mitigation of the penalty. The magistrates expressed the opinion that the case was one of gross negligence, and inflicted a penalty of 10l. and costs in each case. Hugh Reid, the underlooker of the colliery, was charged under two summonses with having allowed lights other than safety-lamps in a place where there was explosive gas, and with having allowed men to work in a place containing gas. Defendant was fined 2l. and costs.

TRADE OF THE TYNE AND WEAR.

Sept. 30.—The Coal Trade has been tolerably brisk in some branches during the week, and the shipments of house, steam, and gas coal have been large. Should the winter prove to be severe—and it is generally expected that it will be so—there will be a demand for good class house coals. The demand for first-class steam coal is healthy, while manufacturing coal is limited, and prices very low. The Coke Trade is dull, and prices range from 12s. to 16s. per ton at the ovens. Best house coal is 13s. to 14s. per ton at the pits. A strike has taken place at the large steam coal colliery at Seghill. The dispute occurred in this way. Periodically once a quarter the working places are balloted for, and sometimes certain leading places are let as contracts. As many of these contracts have of late been let at high rates, causing serious additional expense to the owners, it was determined to ballot for the working places, and the men, rather than submit to this arrangement, have turned out on strike. The owners claim that they have a right to determine what place shall be balloted for, and in this view they have the support of the Coalowners' Association. Mr. Burt and Mr. Bryson have been called in, with a view to effect an arrangement, if possible, and they have had a meeting with Mr. Forster and Mr. Potter, but no agreement has been arrived at as yet. But as the men have agreed to leave the matter in the hands of the above-named gentlemen it is hoped that a settlement will be made shortly.

The award of Mr. Kettle on the long-pending question as to "shooting fast" in the Northumberland collieries has at length been received. He has decided against the system of shooting fast advocated by the men. As bords are driven into the solid coal from 4 to 5 yards in width it has always been the custom to cut up vertically on one side of the bord, in addition to holing at the bottom, and this vertical cutting the men wished to abandon, and thus blasting would have to be substituted for "nicking," or cutting. It was contended that the powder used would deteriorate the quality of the coal, and in order to test this a party proceeded to Malta some time ago, and on the voyage made many practical experiments to test the quality of the coal produced by blasting entirely on the one hand, and by nicking or cutting one side on the other. The result, as might be expected, was that it was clearly shown that the coal got on the old system was much superior to that got by "shooting fast." It is, however, odd that the system which is superior to both those alluded to—that is the long wall system—has not made more progress in this field, as when the coal is worked by long wall little blasting by powder is required.

The Railway Jubilee held at Darlington during the present week has, of course, attracted much attention. It is now fifty years since the railway system was fairly begun as a system, and on such a scale as to give some idea as to the future changes likely to be effected by the wonderful locomotive engines worked upon a railway. The Stockton and Darlington Railway was then opened, and the late Mr. Joseph Pease occupied a prominent position as one of the men who originated this railway. He was also the first Quaker who obtained a seat in the House of Commons. A splendid statue has been erected to his memory at Darlington, which was unveiled on Monday. At the time this Stockton and Darlington line was opened it was thought to be impossible that eight miles and three quarters could be traversed by a locomotive in the short space of sixty-five minutes. In the "Quarterly Review" of 1829, what were called the revolutionary schemes of Mr. Stephenson to supersede the mails and stage-coaches were deemed visionary and unworthy of notice. "What" (said the reviewer) "could be more absurd and ridiculous than the prospect held out of railway trains travelling twice as fast as stage coaches? We should as soon expect one of the people of Woolwich to be fired from one of the Congreve rockets as to travel by such a machine, going at such a rate." While at present trains frequently travel at the rate of sixty miles per hour.

The Chairman at the banquet which was held on Monday evening was Mr. Leeman, M.P., Chairman of the Directors of the North-Eastern Railway Company; while Mr. Henry Pease, only surviving son of the late Mr. Edward Pease, was in the vice-chair. The representatives of the continental railways present at the banquet were Count de Arncliffe, and M. W. Bartholomew, Administrators of French railways; M. Solacrap, director-in-chief of French railways; Messieurs Sevine, Fourquet, Courras, Heinsean, engineers of the Orleans Railway Company; MM. Mathia and Maillet, engineers of the South of France Railway Company; and M. Bergereau, administrator of the Channel Tunnel Company, of the Swiss Railway, and of the Railway Company of the West of France. A list of the other gentlemen present at the banquet will show that all the leading engineers and commercial gentlemen of this district, and also a great number from other districts, were present.

The visitors to Middlesbrough had ample opportunities of observing the development of trade and industry brought about by the agency of the railway system, the chief works being opened for their inspection. The Exchange attracted the attention and surprise of many of the visitors, owing to the completeness of the arrangements of the building, where so much of the business in connection with the iron-trade is transacted. The Railway Company's docks were also visited, and there are still many evidences remaining to show the improvements and extensions which had become necessary owing to increase of trade which has taken place during the course of years, the docks now occupying an area of 30 acres, and being fitted up with all the best appliances for the carrying on of an extensive business. The extension was commenced in 1859, and was completed in 1873, and Messrs. Hodgson and Ridley being the contractors, and Messrs. Cudworth and Whiffam the local engineers. In addition to the old entrance of 30 ft., a new en-

of 85 ft. has been made, and about 1300 ft. of quay-wall has been built. The works of Messrs. Bolckow, Vaughan, and Co. were also thrown open to visitors, who could witness all the processes of iron manufacture, and, in addition, could have described and shown to them the measures which have been taken to ascertain the extent and capabilities of the salt deposits beneath Middleborough. Among the other works thrown open were the Britannia Iron Company's Works, Hopkins, Gilkes, and Co.'s, Cochrane and Co.'s, Messrs. Lloyd and Co.'s, the Newport Ironworks, Gilkes, Wilson, Pearce, and Co.'s, and the Clarence Ironworks. A great number of the visitors paid a visit to the Albert Park, the noble gift of Mr. Bolckow, the M.P. for the borough, and were delighted at the size and beauty of the grounds.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 30.—The demand for best thick coal continues to show a steady improvement in the Dudley district, and prices are well supported on the basis of 16s. for best quality loaded into boats. The thin coal masters experience some improvement in the demand, but prices continue to show a good deal of irregularity.

At the trial-boring for coal on the estate of the Cannock and Huntington Colliery Company a further seam, 8 feet in thickness, has been passed through at the easy depth of 532 feet. The success of this enterprise is now established beyond all doubt, but the boring will be continued by the Rock Boring Company to a total depth of 600 feet, according to contract.

The South Staffordshire iron trade is languid both in pig and the finished departments, and the cost of production in the commoner qualities as compared to selling rates is much complained of by the manufacturers. The course of prices for pig-iron shows a slight improvement, not owing to any increase in the demand, but because of the restricted make, and the comparative lightness of stocks in the district. Common cinder pig are quoted 2l. 15s. to 3l. 2s. 6d. per ton, and best native all-mine are steady at 4l. 15s. per ton for hot-air, and 5l. for cold-air makes. Finished iron, with the exception of sheets, commands very little attention, and prices remain on the basis of 7l. 15s. for unmarked, and 10l. per ton for branded bars.

To-day's quotations on the Birmingham Stock Exchange included the following:—Cannock and Huntington Colliery Company, 4½ to 5 prem.; Sandwell Park Colliery, 3½; Spon Lane Colliery, par; Patent Nut and Bolt, 6 prem.; Ivy House Colliery, 2 dis.; Jno Bagnall and Sons, 5½; Chillington Iron, 5½; Hamstead Colliery, ½ prem. The tone of the market is steadier.

The Black Country does not wear an active aspect to observers accustomed to its autumn appearance a few years ago; but the proportion of workpeople unemployed is small, and no man having practical knowledge of any sort of operation outside the offices at finished ironworks need want a wage-earning occupation for an hour. In this respect the current week is no improvement upon last. Puddlers are compelled more widely than ever before to work level-handed—that is, they cannot get enough under-hands, and two puddlers finding themselves in this predicament combine their energies, and each in turn do the work of the under-hand. The effect of this is to considerably reduce the aggregate make of the district.

The North Staffordshire iron trade is a degree more active this week, owing to the anxiety to clear off orders before the impending close of the shipping season. Coal is in plentiful supply, and prices are without change.

The miners in the Old Hill and Dudley districts are agitating for an advance of 6d. per day in the rate of wages; should this be conceded an advance of 2s. per ton in the price of coal would immediately follow, unless the miners will consent to work an extra hour per day.

The directors of the Chillington Iron Company (Limited) have issued a circular in which they inform the shareholders that, notwithstanding the depressed condition of the trade, they have made a profit of 2626l. during the half-year ending June 30; and this amount has been carried forward to the accounts of the current six months.

Referring to the fatal accident at Deepfield Furnaces, Mr. Elwd. Jones, furnace manager of the Ruabon Ironworks, North Wales, writes:—"At these works we have had in operation for many months a patented contrivance of a very simple character, called a 'tuyere alarm,' by which a leakage of water from the tuyere, or an insufficient supply to it, is at once detected, and an alarm given, which, if attended to, renders such accidents as the one alluded to almost impossible. Since we have here fully adopted this expedient many timely alarms have been given, and I have no doubt accidents have been thereby avoided; and I may say we have not had a single burnt tuyere. The apparatus is inexpensive and easily applied, and I shall be happy to afford any information on the subject to parties who wish it; for I feel it a public duty to make known whatever may lead to prevent such terrible calamities as that which has occurred at Deepfield, and to which all furnaces are more or less liable unless some self-acting 'alarm' is provided."

THE HAWNE COLLIERIES COMPANY.

An extraordinary general meeting of shareholders was held, at the Hen and Chickens Hotel, Birmingham, on Saturday, for the purpose of receiving the report of the committee of investigation appointed at the last meeting, and of taking such action thereon as the company might deem advisable. Mr. J. C. DAVIS (Chairman of the board of directors) presided, and there also present Messrs. Jarvis, Robinson, Johnson, Wormald, Jackson, De Boos, the Rev. Mr. Wall, &c.—Mr. DENNIS first read the report of the committee of investigation, which was briefly as follows:—

The committee of investigation met at the Old Bush Hotel, Dudley, on Sept. 9, and subsequently at the offices of the company, and finding that some of the shareholders wished to be represented by counsel, they thought it better that considering the state of affairs of the company, the enquiry should be conducted by counsel for the whole body, and accordingly they instructed Mr. De Boos, the solicitor to the sub-committee of the directors, to retain the services of Mr. Stubbs, who has examined all the witnesses, and has given the committee the necessary help. The committee find by the books presented to them, which have been exceedingly well kept, that the company is indebted at the present time to various persons in the sum of 4546l., of which no more than about 100l. is being pressed for immediate payment. They cannot but think that the grateful thanks of the shareholders are due to Mr. H. W. Johnson for the promptitude which he has shown in advancing money to meet the pressing liabilities of the company at this crisis. The committee is decidedly of opinion that Mr. Nicholson, Mr. Gilbert, Mr. Merchant, Mr. Reynolds, and Mr. Wigginton should at once cease to be members of the board of directors. The committee also find that Mr. Jennings has never been legally appointed solicitor to the board, but that to all intents and purposes Mr. B. F. French is the present solicitor, and that the legal charges of Mr. Jennings, as they are advised, not recoverable, but that Mr. Jennings is a debtor to the company of at least 200l., and that he should be immediately compelled to refund such sum of 200l. Under the advice of counsel, the committee does not present any report as to any legal proceedings. The committee find that the company is possessed of a really valuable property, that there is a disposition on the part of several persons to buy the same, but that such disposal of the property would prevent the shareholders reaping the benefit which would otherwise accrue to them, and consequently they are of opinion that, with a new and more efficient management of the concern, the company will successfully overcome its difficulties, and they, consequently, recommend that each shareholder should subscribe for the company's debentures to the amount of 20 per cent. of the value of the shares he now holds. The committee is of opinion also that Mr. De Boos should be appointed at once solicitor to the company, and they are pleased to find that the sub-committee of the directors have retained his services. The committee are also of opinion that Mr. Davis, Mr. Jarvis, and Mr. Phillips are worthy of the confidence and support of the shareholders. From these gentlemen they have received every information, and although at first there has been some little negligence owing to the confidence that had been reposed by the board, as then constituted, in certain persons which now appears to have been misplaced, the company has every reason to be thankful for the exertions the three above named gentlemen have made. The committee regret that Mr. Johnson thought fit to resign, but they trust the company will have the benefit of his future services, as they have reason to believe that he will, if elected, resume his seat at the board. The committee consider that the report, as presented by them, exhausts the question as to the *bona fides* of the company, but that there are certain matters which may render further investigation desirable.

Mr. REYNOLDS and Mr. WIGGINGTON strongly objected to their names being classified in the report with that of Messrs. Gilbert, Merchant, and Nicholson, declaring that they had not any part with those gentlemen, and knew nothing of their transactions. Ultimately, on the motion of Mr. ROBINSON, seconded by Mr. FREDERICK, the report was adopted, with the following alteration in clause 3, "That Messrs. Nicholson, Gilbert, and Merchant be dismissed from the board, and Mr. Reynolds and Wigginton be asked to place their resignations in the hands of the directors to deal with as the shareholders think fit."—Mr. WORMALD then moved that Messrs. Nicholson, Gilbert, and Merchant should be removed from the board of directors. This was seconded by the Rev. Mr. WALL, and carried. Mr. T. PHILLIPS was next elected a member of the board of directors. Mr. JARVIS next gave an account of the prospects of the company, in which he showed that, by raising a much smaller quantity of coal than they would have capabilities for raising they would be able to pay a good dividend. He read some very carefully into the matter, and found that there was no doubt of the colliery paying well. Mr. JONKSON corroborated Mr. Jarvis, speaking very encouragingly of the company's

prospects.—"An appeal was next made to the shareholders present to take up debentures, so as to enable the company to meet pressing emergencies, which it was stated, were small in amount. In response to this appeal, 1500l. worth of debentures were immediately subscribed for. On the motion of Mr. WIGGINGTON, a cordial vote of thanks was next passed to the Chairman—Mr. STUBBS subsequently arrived, and reported the result of the examinations which had taken place in the presence of the committee of investigation. He explained several parts of the report, and in answer to the Rev. Mr. WALL, said, although the committee of investigation would exist a short time in order to investigate certain matters, the board of directors would be quite uncontrolled in their action. The meeting then concluded.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

Sept. 30.—The week has been quite uneventful in regard to the staple trades. There is just a little impetus given to operations at ironworks, but it is attributable more to the fact that the shipping season in several directions will shortly close, and the completion of some contracts having to be hastened, than to any improvement in the demand for iron. Prices are quoted as low as possible, but this does not seem to have any effect on the market, or to induce buyers to give out any more orders than they are really bound to. The time of year has passed now for many new contracts to be given out, and as there are but few orders on makers' books it is seriously apprehended that there will be a very dull state of things during the winter. Some makers are, however, a little more fortunate than others, and they are more or less sanguine of being able to keep their works fairly employed during the winter season. At Cyfarthfa things are exceedingly dull, and likely to remain so. These magnificent works have been in the market for some time past, but as trade has been so depressed buyers have not come forward. The mills have been entirely idle for many months past. The only works at which there is anything like a show of activity are the Dowlais and Rhymney establishments. The tin-plate trade is, if anything, more depressed than iron-making, for not only does the demand not improve, but the cost of manufacture continues to increase, and makers are almost indifferent whether they secure contracts or not.

The Coal Trade is still fairly active, but there is rather less doing than was the case a few weeks ago. The enquiry for steam coals on foreign account appears to be falling off to some extent, but this is made up for by an appreciable improvement in the house coal trade. Prices, however, are very low, and makers are complaining of the inadequate returns they secure upon the large capital invested. At some of the pits the men are working assiduously, and the output is large; but, generally speaking, the men are cautious not to glut the market, and, besides, a good deal of time is still taken up in discussing the Vivian-Macdonald difficulty. As is now pretty well known, the votes for the retention of Mr. Macdonald, M.P., on the Conciliation Board were overwhelming; and, as Mr. Vivian, M.P., had requested the masters to accept his retirement from the board, the men have been waiting anxiously to see whether the retirement would be accepted by the masters, but nothing further has yet transpired. The Union advocates are still busy in their cause. Meetings are constantly being held in different parts of the district for the purpose of urging the Union claims, and it is said that large numbers are added to the members every week.

THE SCOTCH MINING SHARE MARKET—WEEKLY

REPORT AND LIST OF PRICES.

During the past week the market has been quiet. In shares of iron and coal concerns prices are tending upwards, Arniston having advanced ½; Bolckow, Vaughan, A. 1; Cairnstable, ½; Monkland (ordinary), 6d.; Omoa and Cleland, 4s.; and Bolckow, Vaughan, B, shows a heavy rise at 45 to 47. Nant-y-Glo and Blaina preferred and Ebbw Vale have been flat, and fallen each 1 and ½ respectively. Lochore and Caplethrae also shows a reduction of ½. Consett Iron Ore quoted 2½ to 2½; is considered likely to advance. United Bituminous Collieries, ½ to ¾. Shares of copper concerns (foreign) are generally lower. Tharsis (all paid) still showing a slight improvement, but the new shares are also lower. Prices of home undertakings are steady, and rather in favour. Bedford 10½; sellers; Drake Walls, 2 to 2½; East Caradon, 1½; buyers; East Wheel Grenville, ¾ to ¾; Great Laxey, 16 to 16½; Great West Van, ¾; sellers; Gunnislake (Clitters), 43s. to 47s.; Killifreth, about 1; Marke Valley, 3½ to 3½; New Pembroke, ¾; sellers; New Consols, 1 to 1½; Prince of Wales, 1s. to 1s.; South Roskear, 5½; sellers; West Maria and Fortescue, ¾; sellers; and Wheel Killy (St. Agnes), ¾ to ¾. In shares of gold and silver mines, Emma and Flagstaff each 1s. 6d. lower. Richmond only mark ¾ higher for the week, notwithstanding that at the settlement it was 1s. 6d. per share was paid for the lot of the return from the mine is 8000 better. Australian Mines Investment is ½ to ¾; Battle Mountain, 1 to 1½; Chontales, 9s. to 11s.; Colorado Terrible Lode, 2½; sellers; Javali, 5 to 11-18ths; Rica, 3s. to 4s.; and Santa Barbara (late Pari), 11s. to 13s. In miscellaneous the tendency is upwards, both classes of Scottish Wagon having improved. Longdale's Chemical is 5 to 6, and likely to go higher. Lawes Chemical, 6½ to 7 ex div., and 7 per cent. preference shares offered at ¾ premium. Earle's Shipbuilding shares have improved, 18½ discount being bid. A detailed list of the several days' business follows.

On THURSDAY last the market was quiet. Arniston, 6½ to 6½. Australian Mines Investment, ½ to ¾. Benhar (all paid), 10 to 10½. Battle Mountain, 1 to 1½. Canadian Copper Pyrites opened at 40s., but declined to 37s. 6d., closing 37s. 6d.; at the special meeting of the shareholders of this company to-day, for the purpose of considering and discussing the proposal made (alluded to in last week's report) to purchase the business and assets of the company, the Chairman of the meeting of the proposal was first, and foremost, a reduction of liability on the shares by reducing the capital by 70,000l. The next advantage was that they started with a clean sheet, and this simply meant that the loss of 29,970l.—increased or diminished as it may be by the operations of the last few months—would be written off the capital. Referring to a statement made in a circular issued to the shareholders, the Chairman explained that although the liability was now only 4846l., against 11,500l. in March last, yet they could not state how much of this apparently improved financial condition was owing to reduced stock. Then, he precipitated had been increased at diminished cost. The directors think, without the information and check of a balance-sheet would give, that there might be a monthly profit of a few hundred pounds. A good deal had been said about the utilisation of sulphur, but he did not think they were in a position to encourage the hope of its being utilised by sale to the acid makers in the United States. The Chairman said, as to winding up, supposing they were right in the belief that a small profit was now being earned, there was a fair prospect of its being increased. He had been interested in another process of precipitating the copper, which he was trying along with the inventor at Hull, and it was applicable to it would be a very much cheaper process than the one of Mr. Henderson. It was suggested that the company should be reconstructed without leaving any liability on the shareholders, but the Chairman explained that it would be impossible to go on without some means of credit, also that the alteration in the company would not weaken their claim against the promoters or vendors. Another suggestion was to simply reduce the capital, leaving the name, &c., of the company as before, and the Chairman said he should be very glad to consider all the suggestions that had been made between now and the next meeting. The next meeting will be called so soon as a balance-sheet for the year ending the 30th inst. is prepared. Cape Copper, 34 to 35; a dividend of 1l. per share, free of income tax, has been declared, payable Sept. 29. Colorado Terrible, 2½ to 2½. Emmas done at 31s., closing 31s. to 32s. Flagstaff, 1 to 1½. Gunnislake (Clitters) in good demand at 2½; sellers are very scarce. Glasgow Caradon, 27s. to 27s. 6d. Huntington done at 38s., closing 37s. to 38s. A circular issued reminds the shareholders that the fourth ordinary general meeting was adjourned to the 30th inst., to receive the report of the committee of investigation, and transact the remaining business. A memorandum annexed to it from the Chairman of this committee states that they have found the time at their disposal insufficient to make a thorough investigation of the company's affairs, and to receive a report from the engineer employed to examine the works in Canada, and they will, therefore, ask the shareholders to have another meeting, called not later than Dec. 31 next, to receive and consider the same, which the directors recommend the shareholders to agree to. Killifreth firm at 1 to 1½. Lochore and Caplethrae, 6½ to 6½. Monkland, 52s. 6d. to 53s. 6d. Omoa and Cleland, 48s. to 48s. Richmond done at 10, closing 9½ to 10. Tharsis lower, done from 2½ to 2½, closing 2½ to 2½. New shares done at 13½, closing 13½ to 14. West Maria and Fortescue, 6s. to 8s. Young's Paraffin done at 10s. and 10s. 6d., closing 5½ to 5 7-16ths. Scottish Wagon (all paid) done at 10½, closing 10½ to 10½; new shares, 84s. to 87s.

On FRIDAY a moderate business was done. Arniston, 6½ to 7. Benhar (all paid), 10 to 10½; new shares done at 5. Bolckow, Vaughan, A shares done 48. Cairnstable done at 9½, closing, buyers, at 9½. Canadian Copper Pyrites done at 37s. 6d., closing 38s. to 37s. 6d. Chontales, ¾ to ¾. Chillington Iron remain at 5½; a circular issued by the directors state that, notwithstanding the depressed and unsatisfactory condition of the iron trade, the past half-year's operations show a net profit of 2626l., which they have carried forward to the current half-year. Emmas done at 30s., closing 29s. to 31s. East Wheel Grenville, ¾ to ¾. Flagstaff better at 1½ to 1½. Glasgow Caradon done at 27s., closing 27s. to 28s. Gunnislake (Clitters), 2½ to 2½. Great Laxey, 16 to 16½. Huntington lower at 1½ to 1½. Javali, 5 to ¾; a telegram from the mine states the profit at 1100l. for the month. Lawes Chemical are now quoted (ex div.) at 6½, buyers. Omoa and Cleland, 48s. to 48s. Richmond done at 10, closing 9½ to 10. Tharsis lower, done from 2½ to 2½, closing 2½ to 2½. New shares done at 13½, closing 13½ to 14. West Maria and Fortescue, 6s. to 8s. Young's Paraffin done at 10s. and 10s. 6d., closing 5½ to 5 7-16ths. Scottish Wagon (all paid) done at 10½, closing 10½ to 10½; new shares, 84s. to 87s.

On SATURDAY (being contango-day) very little business was done. Arniston, 4½ to 7. Benhar (all paid) shares done at 10. Bolckow, Vaughan, A, 47 to 48. Glasgow Caradon shares remain at 27s. to 28s.; the sale of copper ore at this company, on 7th inst. was 280 tons, computed, and realised 140l. 4s., or an average of about 112s. 5d. per ton. This is fairly satisfactory; as, though last month's sale of 246 tons averaged 118s. 1d. per ton, yet the sale last year at this time of 255 tons only averaged 101s. 4d., and the same month's sale in the previous year (1873), 255 tons, averaged as little as 81s. 11d. Gunnislake (Clitters) shares offered at 47s.; 42s. bid. Lochore and Caplethrae shares done at 6½. Richmond, 10½ to 10½; Tharsis, 20½ to 20½. Scottish Wagon (all paid) shares unchanged, at 10½ to 10½, but new shares (4d. paid) a point higher, at 85s. to 87s. The following were the rates of continuation of current business:—Contango: 2d. on Canadian Copper Pyrites; 3d. on Emma; 1d. on Glasgow Caradon; 2d. on Port Washington; 2d. to 3d. on Huntington; 2d. on Marbella; 2d. to 3d. on Monkland (ordinary); 3d. on Tharsis (new); 6d. on Rio Tinto; 1s. 3d. on London and Glasgow Engineering; Even: Omoa and Cleland. Backwardations: 9d., 1s., 1s. 6d. on Richmond; 2s. 6d. on Shotts; and 6d. 9d., and 1s. on Tharsis (all paid). The only thing calling for note in these rates is the very heavy "back" on Richmond shares. This is in fact a selling on the part of those who are not in the possession of the shares, or are keeping them off the market.

On MONDAY business transacted was very light, owing to the want of telegraphic communication with the South, caused by the storm. The new account

opened, for settlement Oct. 13; Saturday, Oct. 9, will be contango-day. Arniston done at 7, closing 6½ to 7. Cairnstable 10 buyers, being ½ up. Colorado Terrible offered at 2½. Dalmenny Oil offered at 5½. Denbigh Consols offered at 2. Dunsley Wheat Phosphor offered at 3 16ths. East Caradon asked for at 32s. East Wheel Grenville offered at 6s. Ebbw Vale done at 15½ and 16½, closing 15½ to 16½. Glasgow Caradon easier at 27s. to 27s. 6d. Istocott Colliery (2 shares, 2½ paid), offered at 1. A meeting was held lately to receive the report of the committee of investigation; this report has not transpired, but is understood to be very favorable. It is not anticipated that further calls will be necessary. Marabella done at 80s. Marke Valley wanted at 63s. Omoa and Cleland, 48s. to 48s. Richmonds, 10 to 10½. Tharsis done at 20½ and 20 7-16ths, closing 20½ to 20½. West Maria and Fortescue are offered at 5½. Wheel Killy, St. Agnes, offered at 3½, and 3 16ths bid. Scottish Wagon (all paid), 10½ to 10½.

On TUESDAY the business done was again moderate. Benhar (all paid) done at 10, and new (5d. paid) shares at par. Bolckow, Vaughan, A "higher, at 48 to 49. Cape Copper lower, at 33½ to 34½. East Caradon asked for at 32s. Ebbw Vale flat, at 15½ to 15½. Gunnislake (Clitters), 2½ to 2½. Huntington, 35s. to 37s. Lawes Chemical, 6½, buyers; and 7 per cent. preference shares offered at ¾ premium. Marke Valley, 3½, buyers. Nant-y-Glo and Blaina preferred lower at 34s. to 37s. Omoa and Cleland good, done at 48s., and 48s. to 50s. Richmond done at 10, closing 10 to 10½. Scottish Australian, 1½ to 1½; the sales of coal for the month of July amounted to 15,197 tons. Shotts Iron new shares changed hands at 6½ for an odd lot. Tharsis opened at 20½, but advanced to 20½, closing at 20½ to 20½; new shares done at 14. Wheel Killy (St. Agnes), 3½ to 3 16ths. Yorke Peninsula ordinary, ¾ to ¾; and 15 per cent. guaranteed preference, ¾ to 1. The directors of this company in London have received advice from the committee of investigation at Adelaide, with reports from the Kurilla Mine, to Aug. 9 inst. The following advice from Capt. Anthony's report:—"The stopes in the back of the 15, east of Hall's shaft, are turning out very fair quantities of ore. I have cut into some rich green ore in driving at 6 fms. deep. The pitch in the back of the 25 east is set to six men, at 10s. in 1l., and they have raised 6 tons of black 20 per cent. ore. On May 4 I sold 13½ tons, of an average of 12½ per cent., realising 922l. 3s. 9d. net. Over-ruled during July month (say), 70 tons. Ore on hand (say), 55 tons, average quality, besides (say) 30 tons of low quality put aside for jigging. They can, I think, be no reasonable doubt of still better results as the mine is deepened, especially east of Hall's shaft, where we seem to have got into ore-bearing strata."

On WEDNESDAY the market was quiet. Benhar (all paid) done at 10, closing 10½ to 10½. New shares done at 5. Bolckow, Vaughan, A done at 48½, closing 48½ to 49½. Canadian Copper Pyrites done at 38s., closing 38s. to 38s. Chillington Iron done at 5 1-16th. Colorado Terrible Lode offered at 2½. East Caradon, 1½ to 1½. Ebbw Vale, 15½ to 15½. Great Laxey done at 16½, closing 16½ to 16½. Javali, 5 to 11-18ths. Killifreth, 1 to 1½. Marke Valley, 3½ to 3½. New Pembroke, ¾ to ¾. Prince of Wales, 1 to 1½. South Roskear, 5½ to 5½. Tharsis, 20½ to 20½. West Maria and Fortescue, 6s. to 8s. Young's Paraffin done at 10s. and 10s. 6d., closing 5½ to 5 7-16ths. Scottish Wagon (all paid), 10½ to 10½; new shares, 84s. to 87s.

The following are this week's prices of some stocks, shares, &c., occasionally dealt in on this market, but not quoted (with few exceptions) on any of the Scotch Stock Exchanges:—Iron, Steel, and Coal Companies: Andrew Knowles and Sons, 22½ to 22½; Bolckow, Vaughan, and Co., B, 45 to 47; Britannia Ironworks, 10; Cardiff and Swansea Steam Coal, 3 to 3½; Chapel House Colliery, 3½ to 3½; Great Western Colliery, 9½ to 10½; Leigh and Wilkes Barre 6 per cent. first mortgage, guaranteed by Central Railroad of New Jersey (U.S.), 89½ to 90½; Llynvi, Tondra, and Ogmore Coal and Iron, 25½ to 27½; Mersey Steel and Iron, 4½ to 5½; Myndy Iron Ore, 2; Newport Abercrom Colliery, 3½ to 4; New Sharlston Collieries, preferred, 3 to 3½; Power Llantwit Colliery, 1 to 2; Scottish Australian Mining, new shares, 3 to 3½; South Cleveland Ironworks, 1½ to 1½; Ulverston Colliery, 1 to 1½; United Bituminous Collieries, ½ to ¾; West Cumberland Iron and Steel, 8½ to 9; West Lead, Tin, &c., Companies: Bedford United, ¾ to ¾; Bensberg Lead, ¾ to ¾; Bowden Hill Manganese, ¾; Copiapo Mining, ¾; Court Grange Lead, ¾; Drake Walls, 2 to 2½; East Caradon, 1½ to 1½; Elgar, ¾ to ¾; Great Laxey, 16 to 16½; Great West Van, ¾ to ¾; Gunnislake (Clitters), 2½ to 2½; Lady Constance Lead, ¾ to 1; Marke Valley, 3½ to 3½; New Consols, 1 to 1½; New Pembroke, ¾ to ¾; previous years. The ore raised realised 918l. in the year ending June, 1875; rose New Quebrada, 3½; North Honore Lead, 3 to 4; Prince of Wales, 4s. to 5s.; Flynn Limon Lead, ¾ to ¾; Rio Tinto, 7½; Snowbrook, 4½ to 5; South Roskear, 4 to 5; West Esgrail Lde, ¾ to 1; West Maria and Fortescue, 6½; West Poldice, 1½; Wheel Mary Hutchings, ¾; Yorke Peninsula Mining 15 per cent. guaranteed preference, ¾; Yorkshire Mining, 16½ to 16½. Gold and Silver Companies: Almaden and Tinto, ¾ to ¾; Australasian Mines Investment, ¾ to ¾; Battle Mountain, 1 to 1½; Chontales Consolidated, ¾ to ¾; ditto new shares, ¾; Colorado Terrible Lode, 2½; Don Pedro North del Rey, ¾; Elberndorf and Aurora, ¾; Exochord, ¾; Frontino and Bolivia, 1 to 1½; I.C.L., 3; Javali, ¾ to ¾; Postanora United, ½ to ¾; Port Phillip and Colonial, ¾ to 1; Rica, 3s. to 5s.; Santa Barbara (late Pari), 9s. 6d. to 14s. 6d.; South Aurora, 7-16ths; Tecoma, ¾; United Mexican, 2½; Welsh, "The," Gold, ¾; Winter's Freehold, 2 to 5. Oil Companies: Flintshire Oil and Cannel, 1 to 1½; Midlothian, ¾; West Calder, 1 to 1½. Miscellaneous Companies: Aberdeen Lime, 7 to 8; Bede Metal and Chemical, 3½ dis.; Conglog Slate and Slab, 0½ to 1½; General Sewage and Manure, 4½ to 5½; Langdale's Chemical Manure, 5½ to 6½; Lawes Chemical, 6½ to 7 ex div.; Native Guano, 3½; Newcastle Chemical, 1½ dis.; North Cornwall Kaolin, ¾ to ¾; Phosphor Guano A, 7; ditto B, 2; Thames Chemical, 5; and subjoined are the latest prices, &c., of those quoted on the Stock Exchanges:—

Per share.	Paid up.	Dividends.	Rate per cent.	Description of shares.	Last price.
£10	£8	£12½	£10	COAL, IRON, STEEL.	
10	10	14	...	Arniston Coal (Limited)	7
10	10	14	...	Benhar Coal (Limited)	10½
10	10	14	...	Ditto	8
10	10	14	...	Bolckow, Vaughan, and Co. (Limited)	48
10	10	10	...	Cairnstable Gas Coal (Limited)	10
10	10	10	...	Chillington Iron (Limited)	5
32	29	7	...	Ebbw Vale Steel, Iron, and Coal (Lim.)	13½
10	4	nil	...	Fife Coal (Limited)	4
10	10	...	...	Glasgow Port Washington Iron & Coal (L)	3½
10	10	...	...	Ditto Prepaid	3½
10	10	...	...	Lochore and Caplethrae (Limited)	6½
10	10	...	...	Marbella Iron Ore (Limited)	48
10	10	...	...	Monkland Iron and Coal (Limited)	53s. 6d.
10	10	...	...	Ditto Guaranteed Preference	6½
100	100	...	...	Nant-y-Glo & Blaina Ironworks pref. (L)	37
10	4	15	...	Omoa and Cleland Iron and Coal (Lim.)	1½
1	1	15	...	Scottish Australian Mining (Limited)	23½
50	60	10	...	Shotts Iron	61½
10	6	10	...	Ditto New, issued at 2½ prem.	6½
COPPER, SULPHUR, TIN.					
10	7	...	...	Canadian Copper Pyrites (Limited)	1½
10	10	...	...	Ditto All paid	6½
10	7	...	...	Cape Copper (Limited)	34
2	2	...	...	Dunsley Wheat Phosphor Tin (Limited)	2s.
1	1	12½	...	Glasgow Wheel Phosphor Mining (Lim.)	1½
1	12s.	12½	...	Ditto New	17s. 3d.
10	23s.	...	...	Huntington Copper and Sulphur (Lim.)	5
4	4	...	...	Kapunda Mining (Limited)	¾
10	10	...	...	Paulicillo Copper (Limited)	1
10	10	...	...	Russian Copper (Limited)	2½
10	10	25	...	Tharsis Copper and Sulphur (Limited)	20½
10	7	25	...	Ditto New	13½
1	1	...	...	Yorke Peninsula Mining (Limited)	¾
GOLD, SILVER.					
20	20	...	...	Emma Silver Mining (Limited)	1½
10	10	...	...	Flagstaff Silver Mining (Limited)	1½
5	5	...	...	Last Chance Silver Mining (Limited)	1
5	5	...	...	Richmond Mining (Limited)	10½
OIL.					
10	7	2½	...	Dalmenny Oil (Limited)	5½
10	10	...	...	Uphall Mineral Oil (Limited)	3
10	8½	...	...	Young's Paraffin Light & Mineral Oil (L)	8½
MISCELLANEOUS.					
50	25	16	...	London and Glasgow Engineering & Iron Shipbuilding (Limited)	24
20	11½	...	...	Peruvian Nitrate (Limited)	11½
10	10	Scottish Wagon (Limited)	10½
10	4	Ditto New	86s.

Last day for this account Oct. 9; settling day, Oct. 13.

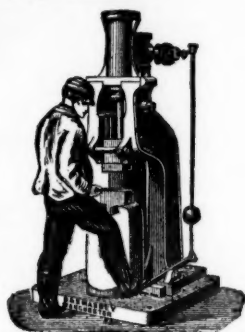
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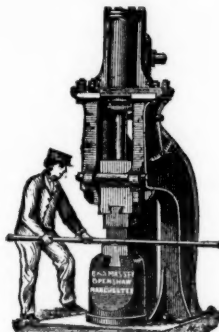
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PRIZE MEDALS Awarded:—Paris, 1867 Havre, 1868 Highland Society, 1870; Liverpool, 1871; Moscow, 1872; Vienna, 1873; Scientific Industry Society, 1875.

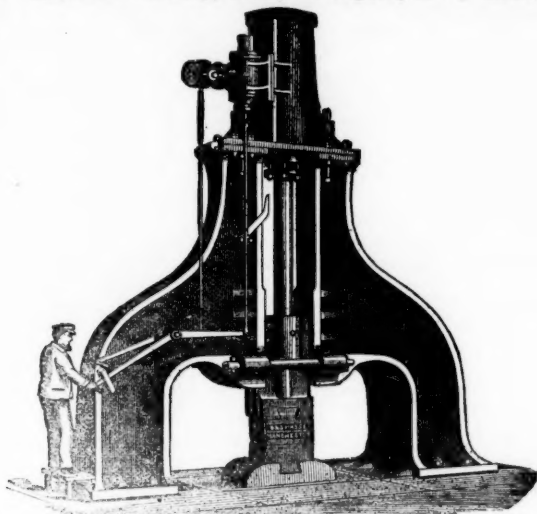
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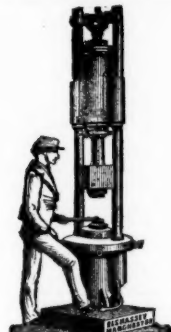
Hammer with Foot Motion.



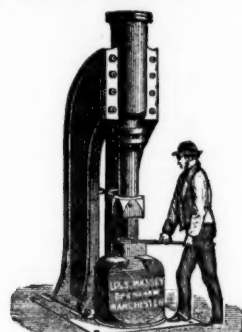
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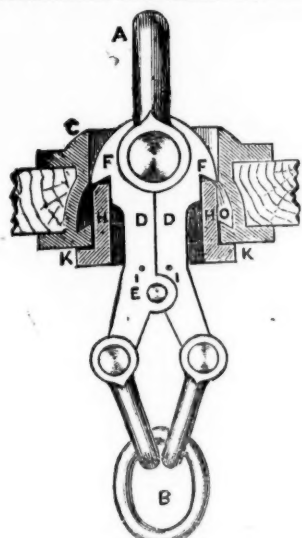
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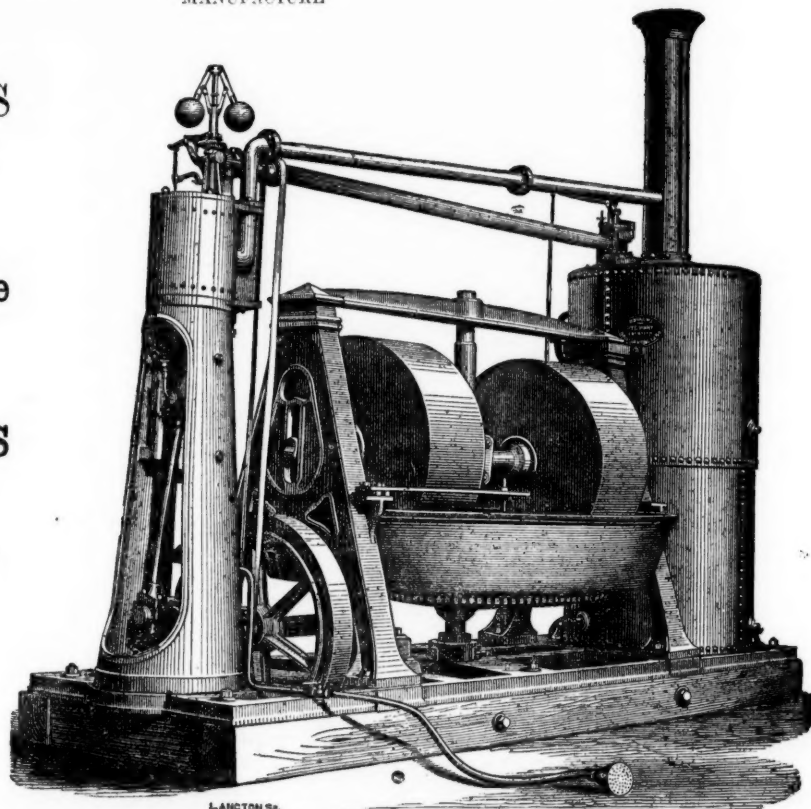
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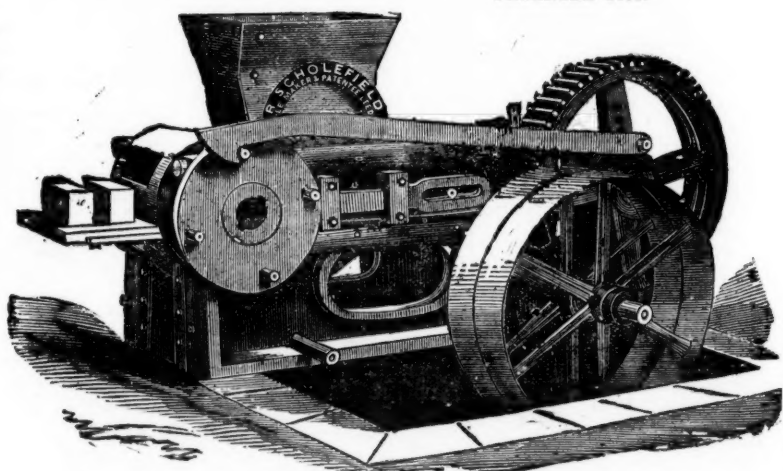
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2 men digging, each 4s. per day	£0 8 0
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1 boy taking off bricks from machine, and placing them in barrow ready for the kiln, 2s. per day	0 2 0
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Total cost of making 10,000 pressed bricks	£1 5 0, or 2s. 6d. per 1000.

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This company grant licenses, under their patents, for the use, singly or in combination, of the most approved machinery for dressing ores, comprising Stamp Jiggers, Classifiers, and Buddies.

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Drawings, specifications, and estimates will be forwarded on application to—
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EXTRACTS FROM TESTIMONIALS RECEIVED:—

Mr. C. E. BAINBRIDGE, of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 27th September, 1873, says:—"After a full season's experience of the very complete Dressing Machine erected by you at our Colliery Mines, we are fully satisfied with our decision to adopt your patents in preference to all others. The machinery does its work as well as we can desire, and better than we anticipated. We are now getting through 70 tons of ore stuff per day, of rich quality. Without your machinery we should have been at a standstill, for we cannot get hands to supply our wants elsewhere. It saves fully one-half of the old wages, and vastly more on the wages we now give, and the saving in ore is not much short of 10 per cent. You can quote from this letter as you think proper."

Mr. COULTAS DODSWORTH, of Haydon Bridge, writes, on the 15th January, 1874:—"I have just returned from the Stonecroft and Greyside Mines, where I have seen your 'Patent Ore Dressing Machinery' at work, with which I must say, I was highly pleased. It is decidedly the best machinery I have ever seen for the purpose, the results being as near perfection as possible, and I am quite sure its use in this case will be a very great saving to the company. No large mining establishment should be without your machinery, especially when labour is difficult to procure—a mere fraction of the hands being only required as against the old system, and the work altogether much better done, and a great saving of ore effected. I have heard it said that your machinery is better adapted for poor than for rich ores, but from what I have seen to-day I am quite confident it will do for any kind of ores. I beg not only to congratulate, but also to compliment, you on the great success of your 'Patent Ore Dressing Machinery.' You may use this letter as you think proper."

Mr. MONTAGUE BRALE, Managing Director of the Cagliari Mining Company (Limited), says, on May 15th, 1873:—"I have much pleasure in speaking of the great efficiency of your 'Patent Dressing Machinery,' as erected by you at our mines at Rosas, in the Island of Sardinia. You will remember it has always been considered impossible to dress, or rather separate, the minerals our ores contain by machinery, but our captain assures me he gets a constant return of 76 per cent. of lead with the greatest ease, and I know by the returns we are realising the best market price. I consider this company is much indebted to you for the success you have achieved at so small cost. It may interest you to know, from my experience in several of the British possessions, including the whole of the Australian Colonies, that my opinion is I have never seen any dressing machinery that can efficiently, and at so small a cost, dress, and separate metallic ores, however close the mechanical mixture may be, as yours. You can use this letter in any way you like."

The most satisfactory testimonials also have been received from the GREENSIDE MINING COMPANY, Westmoreland; the TALARGOCH MINING COMPANY, North Wales, and others. Copies of these may be had from Mr. GREEN.

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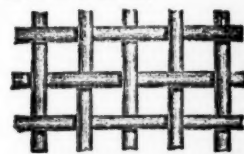
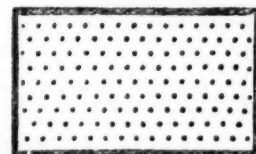
W. H. WILTON begs to thank his friends for their liberal support for so many years, and informs them that (having opened business at Valparaiso) he has now declined business in England in favour solely of Mr. A. JEFFERY, MATHEMATICAL INSTRUMENT MAKER, CAMBORNE, whom he considers (having been an assistant to his father for several years) is in every way capable of creditably maintaining the good name universally awarded to Wilton's instruments.

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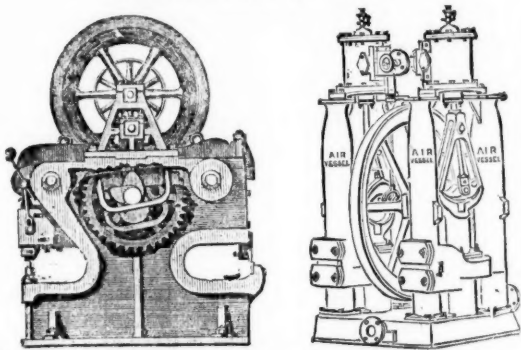
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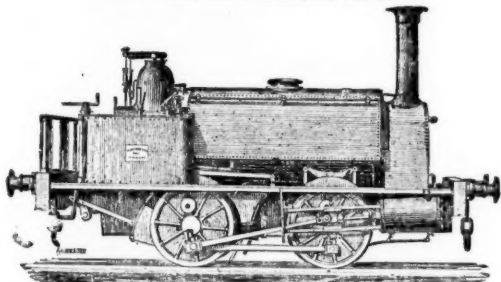
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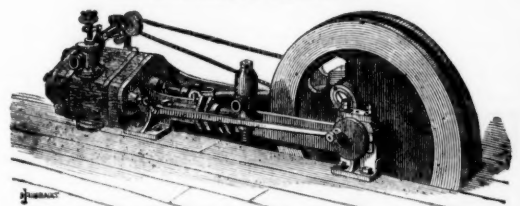
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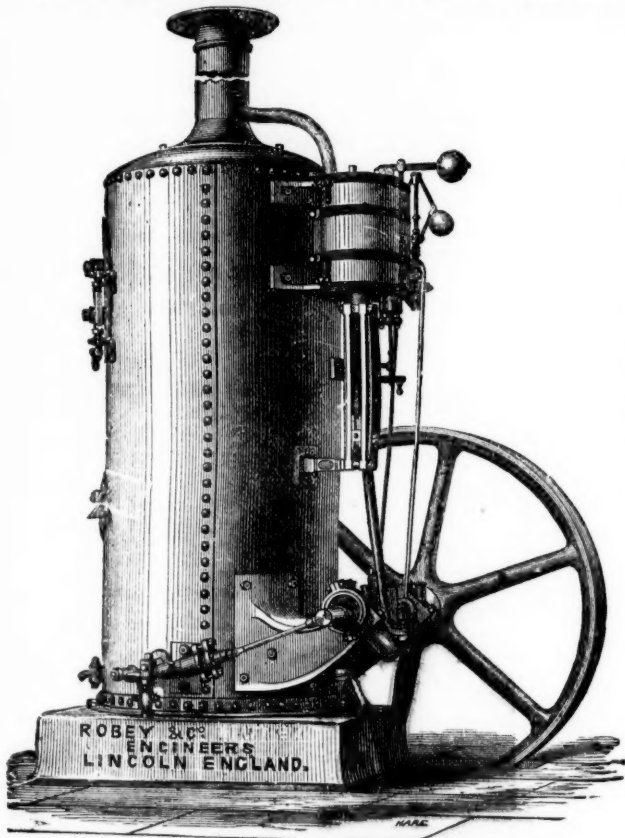
Patent No. 4136

Dated 16th December, 1873.

Patent No. 4150

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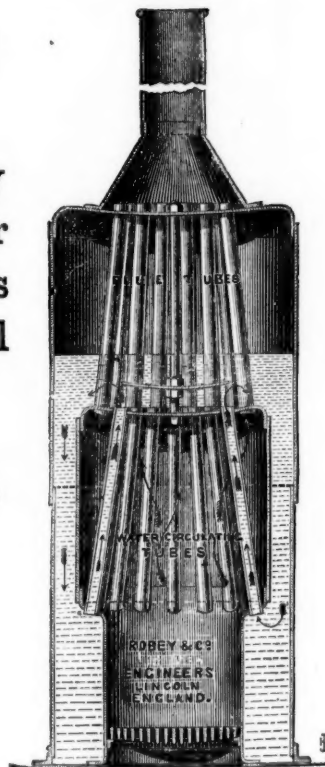
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This wheel (which is now largely in use in England, Scotland, and Ireland) is the only one yet invented which gives proportionate power from both large and small quantities of water. It can be made for using a large winter supply, and yet work with equal efficiency through all variations of quantity down to a fifth, or even less if required. It is easily coupled to a steam-engine, and, in this way always assists it by whatever amount of power the water is capable of giving, and, therefore, saves so much fuel.

This Turbine is applicable to all heights of fall. It works immersed in the tail-water, so that no part of the fall is lost, and the motion of the wheel is not affected by floods or back-water.

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Original Correspondence.

ROCK DRILLS—PROGRESS IN THE SUTRO TUNNEL.

SIR,—The following I have correctly copied from the "San Francisco Mining and Scientific Press" of August 14 and 21. "Report of progress in the Suto Tunnel for week ending August 8:—"

Number of feet in tunnel, August 1	10,296
Number of feet driven during week	117
Distance in, August 8	10,413
Holes drilled	364
Holes blasted	370
Aggregate depth	Feet 2549
Average depth	7
Powder consumed	Lbs. 1071
Explosives consumed	Lbs. 370
Rock extracted	Tons 1483

Rock.—Conglomerate of porphyry; good drilling and blasting. Water.—Thirty-one miners' inches flowing.

Remarks.—Average progress per day, 16.7 ft., the best week's progress ever made. Total delays, laying track, &c., twelve hours.

The following is the report of progress in the Suto Tunnel for week ending August 15:—

Number of feet in tunnel, August 7	10,413
Number of feet driven during the week	82
Distance in, August 15	10,495
Holes drilled	268
Holes blasted	279
Aggregate depth	Feet 1836
Average depth	6.802
Powder consumed	Lbs. 856
Explosives consumed	Lbs. 279
Rock extracted	Tons 1268

Rock.—Clay and porphyry; soft and dangerous.

Remarks.—Delayed during the week laying track ten hours; timbering bad ground five hours.

This tunnel being driven by the Burleigh drill, the above statistics clearly prove the necessity of the use of the Burleigh, or some other drill capable of performing the same amount of work in all mines, and mining companies will do well to encourage the use of them, particularly where hard ground is encountered and progress rendered slow by manual labour is the firm conviction of—

Carnarvon, Sept. 29.

ARQUERITE.

COLLIERS' SLIDING SCALE—No. II.

SIR,—My preceding communication, in the Supplement to last week's Journal, must be considered as the prelude to the examination of the subject which forms the title, and I now proceed to address myself formally to its determination. It requires but little thought to perceive that, of the four series of items which constitute together the cost of coal at the pit, only the third series, or the labour, has any concern whatever with the matter of wages. Let us, therefore, assume to have to find the colliers' or coal-cutters' rate per ton, or per day; also that a certain proportionate number of other men, doing various kinds of work, is engaged for each collier employed, and that the rates of these men's wages shall rise or fall with that of the colliers; in short, that all labour shall, according to its importance, be placed under equal laws. Let us affix, also, a value to the other series of items, which is easily done, so as to leave the labour items to vary in some degree with the sale or pit price.

In the first place, then, set down the cost of management at the mine and office, together with all such expenses as are necessarily incurred yearly at fixed rates, whatever be the output, at the moderate sum of 5*l*. 10*s*. per day (nearly 1700*l*. per annum). Secondly, let the sum of such items as royalty, pitwork, agency, petty cash, &c., which vary with the tonnage, and are independent of wages, be set down at the moderate estimate of 2*s*. 6*d*. per ton. Thirdly, let the sum of all interest on capital, on borrowed money, and on working funds, also what is set aside as amortisation, be taken (say) at the minimum rate of 6 per cent., and let it be granted that the principal sum expended in order to prepare and open the colliery has been 1*l*. for every ton of intended annual output, that is—a colliery yielding 30,000 tons yearly has expended or sunk 30,000*l*. on all purposes. Also, generally, let this profit (minimised at 6 per cent.) be equal to, and vary directly with, the colliers' rate per ton. Lastly, let the labour auxiliary to that of the colliers, such as filling, tramming, banking, screening, &c., be taken to be worth one-half that of the colliers, to which add another one-sixth for any extra work done—such as timbering, airways, top and bottom cutting, &c.—we shall then have the following equation to express all the terms together which can affect the finding of the rate per ton which a collier should claim.

Nature of items.	Outlay in pence per ton.
1.—Constant expenses	= 1320 divided by tons daily raised +
2.—Royalty, &c.	= 30 pence +
3.—Labour cutting	= 1 rate per ton +
4.—Labour, auxiliary	= 1/2 rate per ton +
5.—Labour, extra	= 1/6 rate per ton +
6.—Profit or interest	= 1 rate per ton.
7.—Whose sum	= Pit price per ton.

Now, the pit price, and the daily output in tons can always be known, or fixed from a series of averages, either general or local, which, being so, we indubitably have the following equation, derived from the transposition of the preceding one, to determine the rate per ton which a collier ought to receive—i.e., colliers' rate in pence per ton = (P, or) 2/3ths of pit price per ton, less by 11*d*., and less by (O, or) 4/95 divided by tons raised daily. Hence a compact colliers' sliding scale can be effectively produced by tabulating the two quantities P and O; so, whenever a colliers' rate is sought for under the varying conditions of market price and of output, the difference of P and O will always give the rate sought.

In the accompanying general table I have computed the value of P for pit prices, varying only 2*d*. per ton rising from very low to high rates, and the value of O from the large output of 1320 tons a-day to the very small one of 40 tons daily. There is, therefore, no arbitrary rule, for every item has been explained, and I believe fairly taken at an average; but, if any particular item appears to be under or over stated for individual cases, it is also easy to alter it.

Tables for determining the rate per ton which should be paid to colliers for cutting coal, according to a given rate of daily output, and pit price per ton:—

Pit price per ton.	P.	Pit price per ton.	P.	Daily output.	O.	Daily output.	O.
s. d.	s. d.	s. d.	s. d.	Tons.	d.	Tons.	d.
6 2	1 0	9 2	2 6	1320 to 792	0 1/2	76 to 74	6 1/2
5 4	1 0 1/2	9 4	2 6 1/2	791, 565	0 3/4	73	7 1/2
5 6	1 1 1/2	9 6	2 7 1/2	564, 440	1	71	6 3/4
5 8	1 2 1/2	9 8	2 8 1/2	439, 360	1 1/2	68	6 1/2
5 10	1 3 1/2	9 10	2 9 1/2	369, 304	1 3/4	66	6 1/2
6 0	1 4 1/2	10 0	2 10 1/2	309, 244	2	64	6 1/2
6 2	1 5 1/2	10 2	2 11 1/2	283, 233	2 1/2	62	6 1/2
6 4	1 6 1/2	10 4	2 12 1/2	232, 208	3	60	6 1/2
6 6	1 7 1/2	10 6	3 0	207, 188	3 1/2	58	6 1/2
6 8	1 8 1/2	10 8	3 0 1/2	187, 172	4	56	6 1/2
6 10	1 9 1/2	10 10	3 1 1/2	171, 158	4 1/2	54	6 1/2
7 0	1 10 1/2	11 0	3 2 1/2	157, 146	5	53	6 1/2
7 2	1 11 1/2	11 2	3 3 1/2	145, 136	5 1/2	52	6 1/2
7 4	1 12 1/2	11 4	3 4 1/2	135, 127	6	50	6 1/2
7 6	1 13 1/2	11 6	3 5 1/2	126, 120	6 1/2	49	6 1/2
7 8	1 14 1/2	11 8	3 6 1/2	119, 113	7	47	6 1/2
7 10	1 15 1/2	11 10	3 7 1/2	112, 107	7 1/2	46	6 1/2
8 0	2 0 1/2	12 0	3 8 1/2	106, 101	8	45	6 1/2
8 2	2 1 1/2	12 2	3 9 1/2	100, 96	8 1/2	44	6 1/2
8 4	2 2 1/2	12 4	3 10 1/2	95, 92	9	43	6 1/2
8 6	2 3 1/2	12 6	3 11 1/2	91, 88	9 1/2	42	6 1/2
8 8	2 4 1/2	12 8	3 12 1/2	87, 84	10	41	6 1/2
8 10	2 5 1/2	12 10	3 13 1/2	83, 80	10 1/2	40	6 1/2
9 0	2 6 1/2	13 0	3 14 1/2	79, 77	11	39	6 1/2

Nothing can be much simpler, nor more intelligible, than the use of this table. Example:—

Given P, pit price per ton	8 <i>s</i> . 4 <i>d</i> .
O, daily output	135 tons.
1st, look for 8 <i>d</i> . 4 <i>d</i> . pit price, and find P.	2 <i>s</i> . 3 <i>d</i> . 4.
2nd, look for 135 tons output, and find O.	0 <i>s</i> . 3 <i>d</i> . 4.

The difference is the colliers' rate per ton = 1*s*. 10 1/2*d*.

That is, with the data assumed, this rate per ton paid to colliers, with other wages in proportion, will enable the master to have a profit per ton of 1*s*. 10 1/2*d*. (about 9 1/4 per cent.) after paying the usual charges on working the colliery. The above rate may now be

proved to be true. The amount realised on the sale of 135 tons at

8 <i>s</i> . 4 <i>d</i> . per ton is 56 <i>l</i> . 5 <i>s</i> ., which is distributed as follows:—	
Daily constant	£ 5 10 0
Plant, royalty, &c., 135 at 2 <i>s</i> . 6 <i>d</i> .	16 17 6
Colliers, 135 at 1 <i>s</i> . 10 1/2 <i>d</i> .	12 13 2
Other labour, 1/4 of colliers.	6 7
Extra work, 1/6 of colliers.	2 1
Interest or profit	12 13 2
Total	£ 56 2 6

The difference (2*s*. 6*d*.) being due to disregarded fractions of a farthing in the rates. Assume, now, a low pit price, 6*s*. 6*d*. per ton, and a low output, 65 tons daily:—

Here P, opposite 6 <i>s</i> . 6 <i>d</i> . is	1 <i>s</i> . 6 <i>d</i> .
O, opposite 65 is	0 <i>s</i> . 7 1/2 <i>d</i> .

Therefore, the colliers' rate and profit should each be... 0*s*. 10 1/2*d*. But if the rate per ton be really 1*s*. 9*d*., as is probable, then there would result no profit whatever to the master.

[To be continued.] J. B. HUNTINGTON.

BLASTING IN COAL MINES.

SIR,—I have two pits within a mile of each other; one works a seam of coal 5 ft. thick by the pillar and stall method, and the other a seam of the same thickness by long wall. The quantity of powder used while over 2000 tons of coal were raised was carefully observed, and the following is the result per 1000 tons of coal:—

LONG WALL.	Powder used.	No. of shots fired.
Working coal	Lbs. 27	82
Blasting gate roads	104	43

Total	Lbs. 131	125
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PILLAR AND STALL.	Powder used.	No. of shots fired.
Working coal	Lbs. 76	207
Blasting gate roads	None	None

From this it appears that for every 12 shots fired in a long wall working there are 20 fired in pillar and stall. It would be useful to know the proportions in other collieries.

Sept. 25.

AN ENGINEER.

BIRMINGHAM AND BLAKELEY HALL COLLIERY COMPANY.

SIR,—Your great philanthropist, "Pro Bono Publico," who is, no doubt, a very good man, thinks much about "widows, orphans, poor, or aged" (but I am told there are no such bond or share holders—a right sort of feeling no doubt; but before I can think him equal to guide and direct the bondholders in the matter, I will ask him to stoop once more to do that which he has left undone to secure the salvation of those for whom I presume he lives. I will not ask much of him, and if you would kindly insert these few lines we may, perhaps, all be benefited by his reply. I want to know what has become of the 4000 bonds, or the money for which they were sold (100,000*l*.); what Messrs. Dawes and Plant had; what Messrs. Sheridan and Edwards had; what working capital was left in the company by those two last-named gentlemen; and what has gone with that and the money for which the coal raised has been sold? What has been expended in law; how many lawyers have been engaged; who are they, and what have they had, and what do they want; and have all or either of their bills been taxed, and if they have not, why not? What has become of the money the trustees and directors have found? What did the board in London cost, and what did each director receive for the harm done to the colliery, and where has the rest of the money gone? Shareholders and bondholders wake up. Why are you quietly giving up without asking why? These are a few little questions which should be answered without trouble by our friend. But, Sir, the thing has gone to the bad; it is even said this remarkable disappearance of capital was linked with mismanagement so deplorable that report says this is the cause of the company bursting up.

It is also reported that because the two Staffordshire directors attempted to alter the too apparent bad management and injustice that Mr. Jenkins, the butty collier, was offered 5*l*. to "punch one of their mouths up," and that this offer was from another director, who wished to spoil the mouth of his friend to stop his complaining, and the directors have been heard to tell each other to—, and to do as they please, &c., and one of them was so alarmed (the one who was to have his mouth punched up, I think) that he was obliged to take a policeman with him when he went to the colliery. How could the colliery be expected to go on well with the directors quarrelling in this manner?

Now, Sir, "Pro Bono Publico" has not given us the least assurance that if we exchange our bonds and get shares we shall ever obtain a single shilling. We shall, of course, have the same board of directors, the same engineer, the same lawyers—in fact, the same everything, except, perhaps, that we shall have more debt, and our property vastly reduced in value, and then will our friend's hypothetical widows, orphans, poor, and aged be somewhat hypocritical I should think. Give us, Sir, any kind of acceptable assurance of better days, and we will see what can be done; but as far as the writer can see there is no hope in bad management such as we have had, and shall have if the same men continue to play with the interests of bond and share holders. Therefore, I conclude that if we go on we shall lose all, while we may save a portion by stopping. The mismanagement of this concern is the street and table talk of the neighbourhood, and should the bondholders accede to the desires of those who wish to go on there should be two committees—one to investigate and report on the finance, and where the money has gone, and the other to report on the working and future prospects.

It is evident that something wrong has been going on, this being witnessed by the very large reduction which was effected by Mr. Plant as soon as he could after becoming a director. There must have been something wrong before he joined the board—either the directors did not know the worth of getting the coal, or they were playing a false game to the detriment of the company. Mr. Plant did know this, and if the company could have had the untrammelled benefit of his knowledge from the beginning I think both "Pro Bono Publico" and myself would, in all probability have been saved the trouble of writing. In conclusion, Mr. Editor, I hope that next week will bring a letter from "Pro Bono Publico" in answer to—

West Bromwich, Sept. 27.

ENQUIRER.

THORP'S GAWBER HALL COLLIERY v. CHAPEL HOUSE COLLIERY.

SIR,—King David says "All men are liars," but as this was said "in haste" I fondly hoped that with respect to a certain colliery in South Yorkshire this might be a mistake. The dividend during a brilliant period of prosperity had averaged 40 per cent. for two years, with a promise of still more for the future. This dazzling prospect was too much for my prudence to resist, and I felt very triumphant in being able to purchase about a score of shares at so modest a premium as 50 per cent. It was about a year ago that the directors—bless them!—issued a lovely balance-sheet, and they held a charming meeting, which was fully reported in the *Mining Journal* of Aug. 15, 1874. There was much mutual congratulation, and assertions were made such as these—"The works have been put in thorough working order to prepare for any possibility of bad times," "If prices should ever fall," and "If prices do fall any lower no doubt we shall have a corresponding reduction in wages." "The cost of getting the coal is 5*s*. 3*d*. per ton, and by adding the total expenses incurred during the year, including directors' commission, &c., is 7*s*. 2*d*. per ton." "It is one of the finest and best properties in South Yorkshire, and in the course of another year it will be the largest, and certainly the most profitable." "With the certainty of lower wages, and the prospect of better times than we have had during the last six months, these two points are both verging towards one end—that is, higher returns." Well, fascinated by this charming prospect of even "higher returns" than 40 per cent., and entirely on the strength of these fine sentences, so redolent with hope and promise, I took up my 20 shares or so, fondly treasuring up my certificates as something better than the gold that perisheth, and exultingly awaited the harvest. Well, time rolled on, and there was no dividend the next quarter, but at the end of six months there came a dividend of 15 per cent. instead of 40 per cent. "or more." Again, time rolled on, and in August, 1875, there was a

modest offer on the part of the directors to pay 5 per cent. instead of 40 per cent. "or more." This has not yet been paid, but there is an ingenious proposal to capitalise it, and make it 10 per cent.—in other words, capitalised the 5 per cent. dividend is considered to be worth two years' purchase. Alas! for human hopes and human folly, I am told that I could probably sell out my shares at about half of the price I paid. Should not the addenda "or more" have been read "or less?" The share capital is 100,000*l*. only; there is no debt, no mortgage, no liability; and, according to the directors' report a year ago, they "Have now got our new Darley Hall pit into thorough working order," thus there is no new shaft to sink, no extra costs, no mortgage interest, and there is an output of 1000 tons a day, at a total cost of 7*s*. 2*d*. per ton.

Now, suppose we turn to the Chapel House Colliery, in which, I am glad to say, I hold 70 shares, all bought at a discount. The issued share capital is about 100,000*l*.; there is a debt of about 80,000*l*., which has to be reduced at the rate of about 12,000*l*. per annum; there is (say) 4000*l*. per annum of interest to pay, the output averages only (say) 300 tons daily, at a total cost of 7*s*. 6*d*. per ton; the royalty here is 1*s*., as against 7 1/2*d*. per ton in the Thorp's Gawber Hall; and yet with all this extra burden of royalty, debt, and mortgage interest, the good management of the Chapel House Colliery enables the directors all along, and also during the depressed state of the coal trade, to pay out of profits only a regular dividend of 15 per cent. per annum; and, furthermore, to accumulate out of profits an undivided sum of 11,000*l*., which is laid by towards reduction of mortgage debt and the expense of sinking the new shaft to the deeper seam. With all these disadvantages and burdens the Chapel House Colliery has realised a profit on the colliery working of 32,217*l*., besides having paid off 6054*l*. of mortgage and 5653*l*. interest on the debt from its small output of 300 tons, while the grandiloquent Gawber Hall, with its daily output of 1000 tons, realising 105,891*l*., can only offer to its shareholders as the profit on the year's working a miserable 14,014*l*., and this is the colliery that was to be by now "Certainly the most profitable in South Yorkshire." It may be seen by the Gawber Hall report that the directors modestly tithe the profits, taking 'to themselves 1500*l*. out of 14,014*l*., and that the last modest dividend of 5 per cent. amounts only to 2500*l*., yet the directors think it expedient not to cripple the financial resources of the company by paying this in cash, but to capitalise the 5 per cent. at two years purchase—that is, to issue new shares representing 2*l*. capital for each 1*l*. dividend. As a result of this proposal, the value of the shares fell about 1*l*. per share. It may convey a curious moral if one took the trouble to ascertain to what extent the directors have increased their holdings, in consequence of the depression in the value of the shares.

F. G.

UTAH MINING COMPANY.

SIR,—In the Supplement to last week's Journal, Mr. Applegarth is reported to have confirmed a statement made by a shareholder to the effect that I had recommended Mr. Longmaid as manager of the Utah Mine. Mr. Applegarth informs me that he did not do so, and Mr. Batters, to whom I have applied, also denies that he (Mr. Batters) made any such reply. I wish through the Journal to inform the shareholders in the Utah Company that the statement, by whomsoever made, is entirely and totally untrue.

Sept. 30.

L. G. HEATH.

TIN MINES OF TASMANIA.

SIR,—Believing it will greatly interest your readers, I subjoin an abstract of a valuable paper upon the Stanniferous Deposits of Mount Bischoff and Mount Ramsay, districts of Tasmania, read before the Royal Society of New South Wales by Prof. Liversidge, and I hope that the information will be of utility in directing such attention to the districts as shall lead to development with commercial advantage of the deposits described.—*Sydney, July 8.*

R. ADAMS.

Prof. LIVERSIDGE pointed out that his remarks were in accordance with the evidence presented by specimens of rock and ore collected during a residence of several months. Mount Bischoff is situated about midway between the north west coast and the west coast of Tasmania, with Bass's Straits on the one hand and the Pacific Ocean on the other. There is a line drawn from Emu Bay to about midway between Macquarie Harbour and the mouth of the Pieman river, it would bisect Mount Bischoff, and thus form a base line of a nearly equilateral triangle with Cape Grim. From Emu Bay—the nearest place of shipping—the Mount is distant about 50 miles by the road, which passes through a densely timbered country. Along the north-west coast for more than 70 miles the older palaeozoic rocks are exposed at intervals by the action of the waters of Bass's Straits. These consist of Lower Silurian and still older Cambrian transition strata, all highly inclined; indeed, in many instances, so much so as to be nearly vertical, while they are folded and contorted to a remarkable extent. These are chiefly clay-slate, alternate with stone, limestone conglomerate, and quartzose rock, and which are much traversed by veins and strings of quartz. In not a few instances the limestones are metalliferous, bearing veins of argentiferous galena, associated with pyrites of tin, iron, and bismuth. At a distance of less than 100 yards inland these strata are covered up by basalt, which, as a rule, presents a beautifully prismatic structure, the columns being made up of pentagonal and hexagonal prisms, with well-defined faces. On leaving the coast for the tin mines, the older palaeozoic rocks are no more seen, and Mount Bischoff is reached, being completely covered by the basalt, except in one instance where river action has cut through it. This being a dark argillaceous rock, often very ferruginous, vesicular, and occasionally amygdaloidal, its decomposition has furnished a rich chocolate coloured soil, which will account for the dense vegetation of this part of the island.

The eruptive porphyry of Mount Bischoff forms a crescent-shaped ridge on the summit, the extremities of which ridge are not more than a quarter of a mile apart, the intervening space being a horseshoe depression or basin. It is here that the richest deposits of tin ore exist. This basin looks southward, and presents a natural outlet to the surrounding tableland, while the northern and western slopes are exceedingly steep, presenting a mean angle of descent of 35°. The porphyry is the chief matrix of the tin ore. It has been through the transition strata which repose on the slopes of the mountain, displacing, contorting, and folding them in a most fantastic fashion. These strata chiefly consist of clay-slate, sandstone, and quartzose rock; the former being frequently highly charged with sulphide of iron and tin. The tin ore occurs as a bluish, and traverses the porphyry in veins and lodes, the breaking up of which by subsequent crumpling forces scattered the tin ore on the slopes of the mountain in the form of tales. The transporting and arranging power of water as a cosmical agent seems to have played no part whatever in these stanniferous deposits, inasmuch as the particles and nuggets of the ore afford no evidence of having been subjected to attrition, but, on the contrary, display sharp irregular edges. The disruptive force which shattered the lodes was probably the same as that which affected the vast basaltic flow of the surrounding country. The ore is not generally distributed over the sides of the mountain, but exists in local patches of limited extent in the majority of instances. On Messrs. Walker and Beecraft's section 240 tons of ore were taken out of a chain square of wash-dirt, yet 20 yards on each side of the cutting barely a trace of the ore could be obtained. Some of the masses or nuggets of ore taken out of the wash-dirt on this claim, or from between loose fallen masses of porphyry, weighed as much as 6 cwt. Not a few of these masses were almost entirely free from the matrix. It seems somewhat remarkable that where there are such strong evidences of the existence of lodes in the immediate neighbourhood of these tin ore deposits only one actually well-defined lode has been laid bare. This occurs on the Waratah Company's claim, which is bounded by Messrs. Walker and Beecraft's section on the west, and Messrs. Giblin and Wintle's section on the north. When it is remembered, however, that although nearly two years have elapsed since mining operations were commenced, and that during that time not half an acre of wash-dirt has been collectively removed, this apparent anomaly is somewhat modified. Evidences of shattered walls of tin lodes are daily brought to light. It would seem that in the case of Messrs. Walker and Beecraft's claim the removal of drifts cannot be carried on many yards further in the direction of the summit of the ridge of the mountain before the source of the rich wash dirt is reached. In a hole sunk to a depth of 20 ft., and about 30 yards in advance of the face of the excavation, large masses of tin ore lie so thickly embedded in a cement-like matrix that recourse has been had to the mail and wedge to remove them. The discovery of the Waratah lode will, no doubt, modify Mr. Ulrich's opinion previously expressed that the tin occurs in bunches only, and not in lodes. The depth of the stanniferous drift varies from 1 to 30 ft., the greatest depth being, as a rule, on the steepest slopes.

Although the eruptive porphyry is the chief source of the ore, there are rich deposits consisting of tin and peroxide of iron, as in the case on the Mount Bischoff Company's ground, where a face has been opened up to a depth of 30 feet. This excavation is not more than 80 or 90 yards from the works on Messrs. Walker and Beecraft's claim, and presents entirely different characteristic features. No large masses of white porphyry are seen here, among which the tin ore is disseminated in coarse particles and large nuggets, but, on the contrary, fine-grained black tin is found dispersed through a drift, composed of concretionary fragments of iron ore and coarse sand. Ascending the slope of the basin from the face of the works in going to the top of the mountain, the tin, iron, and sand assume a cemented condition, and finally at the summit appear in cliff-like masses of a conglomerate of tin, iron, and silica, which is sufficiently hard to require blasting. This is called the tin lode, and it can be traced for fully 1/2 mile on the ridge of the mountain. So rich in tinstone is this formation that blocks of several hundredweight of nearly pure binoxide of tin are broken off. The porphyry occurs in three different conditions at Mount Bischoff—First, as highly ferruginous, as at the company's ground; secondly, as a very felspathic rock, slightly coloured by the presence of oxide of iron, as seen at the adjoining claim of Messrs. Walker and Beecraft, and other sections; and, thirdly, as a light-green coloured rock, which appearance is due to the presence of olivine. Small grains of native copper have been found associated with the ferruginous tin ore, while on an adjoining section belonging to the company rich argentiferous galena obtains; nothing up to the present time has been done to develop the latter ore. Lodes of sulphides of antimony and zinc exist—the former having a gangue of carbonate of iron and fluor spar, the latter of fluor spar alone. Up to the present time sluicing operations have been carried on by dam water, which after passing through the sluice boxes returns to the reservoir to be again pumped up. As a consequence the water is always thick, and much of the

fine tin ore is carried away in the tailings; at least 40 per cent. thus escapes. Now, however, that a tramway 1½ mile long is nearly completed to the Waratah river, which encloses half of the base of the mountain, and where there is a never-failing supply of clear water, and also falls 154 ft. high, all the rich tailings will be dressed and crushing mills be set in operation by the water-power.

The traveller, in ascending Mount Bischoff, passes at a single step from the great basaltic flow occupying the surrounding country to the stanniferous porphyry, the point of contact being most clearly defined. The climate of Mount Bischoff is simply execrable. It is a proverb that "it rains at Mount Bischoff when it rains nowhere else." As a rule, it rains nine months out of twelve. The terribly dense nature of the surrounding myrtle forests has, doubtless, much to do with this meteorological condition of things. The result is that all vegetation is thickly draped with moss, and the boulders scattered over the surface of the ground. Club mosses abound, the growth and decay of which have furnished a covering of peat seldom more than 1 ft., but more often 4 and 5 ft. thick. This and the dense scrub and large timber constitute the stripping of the miner for immediately beneath is the washdirt. Nature, perhaps, never threw greater difficulties in the path of the pioneer of a country's mineral resources than those met with at this inhospitable region. The great barrier which confronts him on every side is the growth before mentioned—the "horizontal." It consists of trees whose stems and branches have a circumference, as a rule, varying from 1 ft. to 3 or 4 ft., and which have a peculiar twisting, folioid, and interlacing themselves to such an extent that a vast arboreal reticulation is presented, often to a height of 25 ft., and through which an object is seldom visible at a distance of 10 yards. At short distances through this network tall myrtle and pine trees ascend, whose branches, often meeting overhead, produce a cimmerian gloom, through which the sunlight never penetrates. The rank odour of decaying vegetation is often almost overpowering. Everything is covered with moss and fungi. Hence the moisture is sufficient to render the country a fit habitation for a species of land lobster, whose circular mud-built walls and burrows are found everywhere. These opposing obstacles to the prospector are gradually vanishing. Tracks are being cut in all directions, and ere long in the silence and solitude of the primeval forest, with its impenetrable barriers of "horizontal," will be heard the sound of the miner's pick, the boom of the blast, and the snorting of the engine—those forerunners of advancing civilisation.

Mount Ramsay, so named after Prof. Ramsay, of Jermyn-street, is about ten miles from Mount Bischoff, is essentially composed of a coarse tourmaline granite, occasionally passing into a fine-grained rock. This granite rises in three bold lofty peaks. Unlike Mount Bischoff, the older palaeozoic strata are seen only around the base. The creeks and gullies furnish very superior ruby tin ore, associated with considerable quantities of zircon sand and tourmaline; but the tin occurs in much less quantity than at Mount Bischoff. The best of my prospects seldom reached an ounce to the tin dish. Since I was there, however, more than twelve months ago, very promising indications of lodes have been found, consisting of rounded nuggets of nearly pure bismuth of tin, varying from the size of a marble to a hen's egg. In accordance with my advice, these have been followed up until portions of the lodes have been obtained, showing very little signs of abrasion. Mount Ramsay, however, is better known for the remarkably rich and large lode of bismuth. This is said to be between 30 and 40 ft. in width, while it has been traced for a considerable distance. This valuable discovery was made after I left the locality, while a party was prospecting for tin, and which latter metal, in a native state, they at first took it to be. As is often the case, the bismuth is associated with considerable quantities of wolfram. Very recently, some highly promising samples of copper ore have been found there, both in the form of carbonate and sulphide. This locality bids fair to be a powerful rival in its metalliferous deposits to its neighbour, Mount Bischoff. A pack horse truck is now being made from the open country to bring away the bismuth. Before taking leave of this north-western part of Tasmania brief reference should be made to two other localities where stanniferous deposits have been found. One is at Wombat Hill, about midway between Mount Bischoff and Mount Ramsay, and the other at Mount Houtoupe, 20 miles from the north-west coast, in an easterly direction. Both of these localities are granitic, and furnish ruby tin, but in quantities that leave it doubtful whether they will pay to work. At Wombat Hill the tin ore is extremely fine, and is associated with considerable quantities of chromate of iron and titaniferous iron sand, while at Mount Houtoupe not only the two latter minerals largely exist, but also plumbago.

In October Prof. Liveside visited the east coast of Tasmania in search of tin ore deposits, being led thither by a knowledge of the fact that a large extent of granite bearing country extended in a belt, with but few interruptions for a distance little short of 100 miles on the side of the island. From Schouten Island, where is a very coarse granite, containing very large crystals of felspar, rises in bold lofty hills, he found this rock to occupy nearly the whole of the coast line. Here and there depressions, a short distance inland, are occupied by carboniferous deposits, as, for instance, at Bischoff and on Schouten Island itself. Upon reaching George Bay he found the granite to assume a rather finer grained character, and very much less micaceous, the gravel formed by the decomposition of this rock furnishing small grained ruby tin ore in small quantities wherever he directed it near the coast. At a distance of 10 miles inland in a north-westerly direction from the bay he found the granite covered up by altered palaeozoic rock rising in hills of considerable altitude, and these in turn become covered with greenstone, the intervening country being occupied by low undulating hills of granite, thickly covered with gravel and pebbles of decomposed granite, the whole of which is stanniferous, the ore almost invariably being associated with sapphires and zircons, which, however, are too small to have any mercantile value. At the head of a rivulet the source of a fine stream, known as the Golden Piece, he discovered tin ore in highly payable quantities, extending over a considerable area. This locality forms the scene of operations of the Ruby Tin Mining Company, and is only five miles from the place of shipment at George's Bay. The country is open timbered with peppermint trees, and is frequently marshy. The depth of washdirt ranges from 1 to 8 ft., the maximum being for the most part on the hill tops, which are frequently small plateaus. This stanniferous district extends in a south-easterly direction as far as Palmyra and the Mount Nicholas Range. More recent discoveries show that tin ore bearing country obtains at a greater distance in the north westerly direction, as, for instance, the Boobyalla, Mount Cameron, Mount Horror, and in the Ringacomma district, or Gould's new country. Scarcely a day passes without tidings of fresh tin ore discoveries being made in this part of the island. From what Prof. Liveside has stated it will be seen that Tasmania gives great promise of soon becoming an important tin-producing colony.

P.S.—In my last communication I mentioned a pyrites deposit over 30 ft. thick, yielding over 1 oz. of gold per ton. Since writing you a branch of it has been sunk on, and free gold found in it below the pyrites. R. A.

SOUTH AUSTRALIAN MINES AND RAILWAYS.

SIR,—Some 12 years ago, after the publication of my little work on "The Mines of South Australia," I wrote you a few letters in reference to mining in this colony, and I now again refer to the subject because of a movement in connection with our extensive mineral deposits in the country to the north of Port Augusta. Here and there, over a vast area of country, two or three copper mines have been worked, but not very profitably, owing to the great expense of carriage. The Yudanamatana, Daly and Stanley, Welcome, and Blinman Mines, though very rich in copper, have had to succumb to the heavy cost of cartage. It can scarcely be unknown to you that for many years past efforts have been made to get a railway constructed for 150 or 200 miles northwards from Port Augusta, but owing to the obstacles thrown in the way by successive local Governments, nothing has been done. The voice of the country has, however, during the last six months made itself heard in an unmistakable manner, and fortunately we have now in power a Ministry determined on carrying out in this particular the wishes of the people. One effect of this intention has been that a large number of valuable mineral claims, which had been forfeited, have been taken up with a view to future operations. I believe they have been secured chiefly for a large English company, whose agents here have managed well to obtain such an extent of rich mineral lands. I can speak from my own personal inspection of many of the claims referred to, that they promise to yield large quantities of copper, and without more than an average expenditure for working. Besides these claims, there are many others probably as good, for, to use a common expression, "the North Country is full of copper." There are several very promising claims in the neighbourhood of the Blinman Mine, some of which are described in my book. These have been secured by the company referred to; they have also taken up the Mount Huro and Mount Rose Mines, the latter fortunately lying close in the route proposed for the railway. The Mount Rose property I consider one of the best that I saw in the North, and there has been sufficient work done to show the permanent nature of the lodes of ore, which are very rich, from 20 to 60 per cent. of copper.

But it is not my object to describe the different mineral claims which the company have been so fortunate as to secure, suffice it to say that from my knowledge of the country we may, when railway communication is established, rival Chili itself in our exports of copper. Nor is copper the only mineral to be found; iron ore, containing from 50 to 90 per cent. of pure metal, exists in immense quantities in the northern part of the colony, also bismuth, manganese, lead, silver, and gold. Gems are occasionally found, and probably a systematic search for them would be rewarded by profitable discoveries. Many diamonds have been found in South Australia, also the white and yellow topaz, cornelian, agate, amethyst, beryl, garnet, cairn-gorm, and others.

A fine gold reef has been discovered about 90 miles N.N.E. from the Burra, called the Waukaranga reef, and some highly payable results have been obtained from the first 300 tons of quartz crushed, the stone yielding on the average rather over 1 oz. of gold to the ton. This reef is remarkably well defined and regular in its course, and is traceable for many miles in a main east and west direction; it runs a little to the north of east. Gold claims have been taken up for nearly seven miles along its course, and many of them are being worked. Further eastward there is some excellent copper country, but which had to be abandoned on account of the cost of cartage. However, as a railway extension from the Burra to Waukaranga is on the programme of the proposed new lines, the copper mines towards the Barrier ranges may be worth working by-and-bye.

Before closing this letter I would mention the existence in the south-eastern part of this colony, near the "Coorong," of a remarkable deposit on the surface of the ground (which is singularly barren there); this deposit is supposed to be petroleum, hardened by some means into a substance resembling india-rubber; it has been proved to be at least analogous to, if not identical with, petroleum, for on being distilled by a person experienced in the preparation of kerosene a highly inflammable oil was obtained, possessing all the best qualities of "Devoe's," and surpassing it in its non-explosive property. I send you a specimen of this "mineral caoutchouc," or "coorongite," as it is called, as it may be interesting both to scientific and commercial men; it yields over 80 per cent. of pure oil. The Government have granted a 15-years lease of 10,000 acres to certain gentlemen to work the land for petroleum, and it is intended to form a company to prosecute the search by boring, &c. Amongst the promoters and lessees are two gentlemen whose names are not unknown in London—Sir John Morphet, and Mr. T. U. Scrutton, son of the late Alexander Scrutton, of the Stock Exchange.

Adelaide, Aug. 12.

J. B. AUSTIN.

THE CHANNEL TUNNEL INTERCOMMUNICATION.

SIR,—While thanking you for inserting my reply and comments to Mr. John De La Haye's letter on the "Channel Tunnel," in last week's Journal, I would beg to correct an erroneous impression and misstatement, "that the tunnel could never be used for conveying heavy goods, such as coals, stones, metals, &c." This may possibly refer to a single-arch tunnel, such as Sir John Hawkshaw's, with two lines of rail only through it, one in and one out; but cannot apply to my triple-arched tunnel, with two lines through each separate arch, one pair of lines being reserved especially through one arch for transfer of heavy goods and minerals direct from our manufacturing and mines to Paris, without shifting or re-loading trucks. All I trust is that the amounts already subscribed for experimental trial borings will not all be spent through chalk strata, but gault clay as well.

Dartmouth-terrace, Bermondsey, Sept. 30.

W. AUSTIN, C.E.

THE DIAMOND—No. V.

SIR,—Pressure of engagements, indicative I hope of an improvement in mining commerce, has caused me to defer the continuance of my subject. First in order of divisions, as promised, is the geology of discovery. Not being universally diffused, it is evident that the matrix of these gems, like special metals, must possess some peculiarity. Such is the case. Much rarer and hence more valuable than gold—though frequently the two are found associated—it is more limited in selection of locality. As a general principle, gold is found in the greatest abundance in quartzose reefs, and though the diamond frequently affects the same ground, it rarely occurs like the precious metals in simple quartz, but in a modification of this mineral. The original rock of Brazil—one of the richest known sources of the diamond—is, according to Dana, the celebrated American mineralogist, a laminated granular micaceous quartzose, named Itacolumite, or a ferruginous quartzose conglomerate. This particular rock occurs in the Ural Mountains in considerable quantities, yet we do not learn that in this district diamonds have yet been discovered in any abundance. Golconda would also appear to depend for its rich yield upon the presence of itacolumite. But in a sandstone known as *cas-catho*, resting upon chlorite and clay-slate, diamonds occur in embedded grains and crystals; the sandstone itself also contains gold, and, as is frequently the case, it exhibits a ferruginous stain. It was from the alluvial soils, mud and sand, brought down by periodical torrents in the provinces of Golconda and Visapool, Bengal, and in the island of Borneo, that until their discovery in Brazil, in 1740, the entire product of diamonds was derived. Here they were obtained by the simple process of washing the alluvial soil. I am induced to give as quoted by Prof. Ansted, in his excellent work on Geology, upon the method employed for exploring and dressing, it being a lucid illustration of the subject.

"With this tool," as sharp as a pickaxe, "the men dig into every promising spot, and deposit on the banks of the river all the mud and sand they get up. There it is looked over by the women and children of the tribes, who, for this purpose take a plank 5 ft. in length by 2 ft. in width, hollowed out in the middle and furnished with a rim on each side 3 in. in height; they place this plank in a position a little inclined, just enough to allow water to run off, heap upon it the mud and sand dug from the river, and continue for some time to pour water upon it. As soon as the water runs away perfectly clear they anxiously look over the hard stony matter which is left on the plank, and pick out all the loose pebbles and large pieces of gravel; these they throw away, and the remaining mass, consisting of smaller grains, they remove to a plank of the same form, but smaller, and spread it carefully over the surface, so that every particle can be separately examined; they do one grain at a time, throwing away all that is merely stone or gravel, and laying aside every particle of gold or crystal of diamond. They usually continue to place the board that the sun shall shine upon it at a certain angle during the operation, that every particle may be well illuminated. The earth chiefly sought after, and most accurately examined, is a red ochre clay, containing a small proportion of oxide of iron; in this the diamond is most commonly found; though, as it is sometimes met in the loose mud, the whole is well washed and examined."

In Brazil, particularly in the Serro de Frio, diamonds are found in rivers and banks adjoining water-courses, and in ravines, and invariably in alluvial soil composed of gravel resting upon granite. Quartz pebbles, schist, brown iron ore, and ferruginous sand are regarded as favourable indications. In searching for diamonds it is evident that, though not imperative, geological knowledge and experience would prove highly useful. Upon meeting with promising ground, the process just described might be resorted to, or, as an extremely simple process the Brazilian method of diamond working, where, when the river waters are low, the negroes dredge up mud from the bed of the stream and carry it to huts of about 150 ft. in length and one-third the width, where, by means of a canal, from which is laid a plank flooring of 5 or 6 yards, with a slight inclination into a series of troughs. A portion of the mud having been thrown into the trough, the water is let in, and the whole agitated till the earthy matter is washed away, and the water left clear. The remaining gravel is now raked up to one end. The negro then examines each pebble, and finding a diamond claps his hands, holds it over his head, and passes it to the overseer, receiving a reward varying according to the value of the find—a diamond of more than 15 carats entitling the fortunate discoverer to his freedom. As an improvement upon these rather primitive methods, it strikes me that a modification of Cornish tin streaming might be judiciously adopted as effective, and involving but a small outlay of capital, time, and labour. In its adoption extreme caution would have to be employed, as, unlike tin and its matrix, the specific gravity of the diamond and its associated pebbles vary to a trifling extent. There appears to exist a striking analogy in the character of the strata yielding diamonds—India, Brazil, the Cape, and Australia—those which exhibit gold frequently yield this precious gem. Thus we learn from recent reports that, in the two last-named districts, diamonds are sought for and discovered in a species of "red sand," in other words decomposed ferruginous quartz, whilst the adjacent rocks, whence the disintegrated soil is supposed to have descended are, particularly at the Cape, described as extremely rich in various kinds of mineral lodes. After much discussion, many doubts and some violent disputations, there can now remain no question of the existence of prolific diamond fields, both in Africa and Australia. Of the estimated value we content ourselves with the information conveyed in the particulars of a sale which occurred on the Jan. 31, 1872. It is thus reported in, I think, the *Mining Journal* of that period, and I repeat the details in reply to those who have hitherto contended that real diamonds from the Cape are, as was once accredited by the Brazilian ones, simple myths, or at the best gems imported into Africa to be re-tributed. It is recorded that the largest sale of Cape diamonds hitherto held was on Jan. 1, 1872, at the rooms of Messrs. Debenham and Co., King-street, and comprised 1000 carats of cut and rough stones. The following comprise a portion of the lots:—A white diamond of 9½ carats, which realised 60k; one, slightly off colour, 7½ carats, 37k; 17 of pure water, 17 carats, 60k; a large one of drop shape, 14½ carats, 42k; six, of fine colour, 10 carats, 68k; an uncut one of 45 carats, described as a crystal of the highest promise, 570k; a native diamond in the matrix (a curious cabinet specimen), 14k; then a magnificent and lustrous brilliant, about 8 carats, 430 guineas; a large and lustrous brilliant, of fine colour, of about 7 carats, 480 guineas.

Amongst the bijouterie were five stars, set with brilliants, 100 guineas; a court tiara, of five graduated brilliant stars, 185 guineas; a brilliant necklace, of 40 graduated collets, 300k; a brilliant pendant or brooch, the stones of the purest water, 105 guineas; a pair of elegantly designed ear-rings, 112 guineas; it is added that the total amount realised was about 9730k. After this we shall scarcely anticipate further objections on the score of the genuineness or quality of the Cape diamonds. One fact relative to this subject is too important for omission, as it emanates from so high a living authority as Prof. Tennant, who states that about 10 per cent. of the South African diamonds are of first-rate quality; one in the possession of the Earl of Dudley is known as the "Star of South Africa," and weighing 46½ carats, being equal in quality to any known.

Slightly digressing from my text, and in order to encourage all intending emigrants especially to obtain a preliminary knowledge of minerals, both in the ready determination of their true character and subsequent methods of treatment, I cannot refrain from repeating an illustration afforded to his class by Prof. Tennant last year. The professor stated that "in taking leave of a pupil who was about to start for the Cape, he put into his hand a piece of corundum, remarking, 'If you find any stone that scratches that it must be a diamond.' The gentleman was present at Du Toit's pan, in the diamond fields of South Africa, and saw a bucketful of mud taken up, from which a pebble was produced. On asking leave to examine it, it was found to scratch the corundum, and 1000k. was immediately offered for it and accepted. Within a week it was sold for 6000k."

In my next and concluding article I will endeavour to describe the true composition of the diamond, and narrate some particulars of experiments to which it has been subjected, and those conducted for proving the practicability of its artificial formation.

W. WHITE.

Laboratory and Assay Office, 25, Finsbury-place, London, Sept. 20.

GOLD IN WALES—No. V.

THE FAULTS OF THE DOLGELLY GOLD DISTRICT.

MR. SALTER'S REPORT.

1.—GREAT LINES OF FAULT PARALLEL TO THE STRIKE OF THE BEDS:—As the lower Cambrian rocks (Cambrian of the Geological Survey), which form the axis or nucleus of the whole country, come to the surface in an oval mass (N.E. and S.W. in its main direction of upheaval, but actually longer from N. to S. than it is from E. to W.); it is clear that the faults which are in the direction of the strike must follow its curves. Accordingly, we find that along the eastern boundary of the great mass of the Harlech and Barmouth rocks the major lines of fault run N. and S., or nearly so. In the neighbourhood of Dolgelly they curve round with the strike, and take a more south-westerly direction; while south of the line of the Barmouth estuary, which is itself a great line of fault, the direction of these main lines of fracture is south-west—the same direction as the Festiniog valley, the Carnarvon chain, and the main masses of North Wales. Some of these principal lines of fault are laid down on the Ordinance Map beyond the limits of the gold district. Their effect is sometimes to diminish the thickness of the beds, but much more frequently to repeat them, and spread them over a wider tract than their outcrop otherwise would give. At the mouth of the Barmouth estuary the thickness is diminished, the upper beds being brought near the oldest; but in general, as in the neighbourhood of Dolgelly itself, they are spread over a wider tract than natural, and are thus repeated again and again, and this is the general arrangement throughout the district. These larger faults are followed by great numbers of parallel smaller ones, and these are of great consequence to the miners in the district under review, inasmuch as they continually shift the boundaries of the beds to right or left, without actually cutting off any particular series, the gold-bearing beds for instance. The larger faults are connected by cross faults, which run not at right angles to them, but generally obliquely, and the angles thus formed are often again cut off by smaller or notch faults. This takes place throughout the whole district, as far as I examined it. I do not know that this set of great faults (No. 1) are metalliferous, but suspect them to be so.

2.—NORTH-EAST FAULTS: Independent of the great strike faults are a series of faults which have a mean direction of some 50° or 40° north of east. They are very numerous in the Gwynfynydd mountain, above the waterfalls, in the Tyddinglwadys and Cwmhesian districts, and down the course of the Mawddach, along the ridges of Cefn Coch, Moel Ispri, Clogau, &c.; they vary somewhat in direction, and are certainly sometimes metalliferous, as at Moel Ispri, and the old copper mines on the Barmouth lode. The Cwmhesian lead lode, which is a fault of considerable importance, coincides in direction with them, and so does the great gold lode of Cefn Coch.

3.—THE EAST AND WEST FAULTS, OR GOLD LODES: As a rule, these seem to run in an east and west direction—i.e., a few degrees north of east. The great Gwynfynydd lode, 60 ft. wide, and the Chidlaw lode, is almost parallel to it. The Cwmhesian gold lode, which is almost certainly the same as the Chidlaw lode (but shattered by faults to be last of all mentioned) is nearly due east and west, though shifted in fragments into a more south-westerly course. The lode that runs from nearly opposite Gwynfynydd farmhouse, by Bwlch-y-ford, is in the same direction; the Penmaen copper and gold lode seems to be in the same direction. The Cefn Coch principal lode runs a few more degrees to the south-west. The Clogau and Garthgell lodes, varying from 10° to 25° south of west, are shifted by faults (as in the celebrated St. David's lode) into a more south-westerly direction; but all these may be called east and west lodes, and are certainly distinct from the north-east faults last described, and are affected and frequently cut off by them.

4.—NORTH-WEST BY WEST LODES (Gold Lodes, Lead Lodes): A series of faults or lodes, probably of the greatest importance, and though as yet found to be metalliferous only in the districts of Tyddinglwadys, Cwmhesian, and Dolfrwynog, they are so rich and so constant in direction there as to demand particular notice. There can be no doubt they all belong to one series; their course, allowing on the map for variations due to the outcrop on hill or valley, may be sufficiently defined as parallel to Dolfrwynog lode, about 25° or 30° south of east. The Tyddinglwadys lead and silver (with some gold) lode, both on the east and west bank of the Mawddach river, although shifted repeatedly to a small amount by all the faults previously mentioned, is one of this series. The Powder-house lode (so called), and the two lodes north of it (one of which has traces of gold), belong to this set. In all probability the fragmentary wide lodes on the boundary of Cwmhesian and Hafod-fraith belong to the series. The whole of these two districts should be explored for them, and they are sure to cross into the Gwynfynydd and Hafod-y-bach districts; they are known to occur on Cefn Deudwr. The important Dolfrwynog lodes, and others parallel to them on the west of Hafod Owen, are part of the set; it cannot be supposed that they stop here. When explored, no doubt, a large district will be found to be closely occupied by these important veins, none of which, so far as yet ascertained, are faults of any great amount.

5.—NORTH AND SOUTH FAULTS: These faults, hitherto overlooked, are the most important in the northern portion (Gwynfynydd, Cwmhesian, Tyddinglwadys, Cefn Deudwr, Dolfrwynog) of the district, inasmuch as they cross at nearly right angles all the principal lodes and veins, and in all probability are the latest of all. They have altered the actual surface more than any of the rest, and are frequently conspicuous by cliff and valley, while those they traverse have made far less feature on the surface; they often shift the lodes considerably, and have been traced by myself in close order, parallel at from 20 to 100 yards apart, and shifting the ground from an imperceptible quantity to more than three furlongs at once. They range all through the district of the waterfalls on Gwynfynydd, through Cwmhesian, coincide with the deep river depression of Tyddinglwadys, and are traceable through all the hills of the right and left banks. They shift the Tyddinglwadys lead lode four or five times on each side of the river, northerly, on the whole, to the west side, being down-thrown on the west, except in the river bank itself, where there is some tendency to reversal. (See rough section of Tyddinglwadys Mines, Fig. 5.) On the east bank they are con-

* The strike is the general direction of the line of upheaval; the dip, of course, at right angles to this.

spacious, and shift the lode decidedly to the south on the east side, and they have the same effect on the lodes west of Hafod Owen and at North Dolfrwynog.

At Gwynfynydd a grand fault of this series throws the broken Chidlaw lode (above mentioned) nearly $\frac{1}{2}$ mile southward, and numerous parallel ones cut up the lode thus thrown, which becomes the Cwmhesian gold lode, and is shattered by these north and south faults into 20 pieces. On the west side of Gwynfynydd these faults cut off the gold lodes entirely, which only re-appear on the opposite side of the valley (Bwlch-y-fford). One coincides with the ravine at Pistil-y-Cain; another defines the valley of the Cain further west. They range north certainly to Hafod-y-bach, but I have not traced them into Mr. Roberts's property. The fault laid down on the surface of the Sarn Helen ridge, parallel to the Trawsfynydd road, and the parallel fault from Bedd Porus to Afon Prysor, are the large guiding faults of this series on the west. They go southwards, but with less force, I think, towards Dolgelly; I have traced them to Gelligamlyn. The most important piece of work I know of in the district is to trace out these faults north and south of the Cwmhesian branch of the Mawddach, and from Moel Ispry to Clogau. The Dolfrwynog copper lodes are, of course, of this series; they bear copper on the west side of Moel Hafod Owen. The copper lodes overhanging the road, east side of Brynianglo, are of the same series.

Proceeding westerly, a fault of this kind ranges along the east side of Cefn Coch, crossing the line of the gold lode; and westerly still I find these faults of great consequence, shifting the beds in a remarkable manner by Cefn Cam, down Cessilgwm, where they shift the Cambrian boundary south on the east side, along Cwmynach, where a larger shift takes place in the same direction, and an opposite one on the east side of Clogau, while the shift on the west side is in the same direction again. That ranging down the east side of Clogau while the shift on the west side is in the same direction again. That ranging down the east side of Clogau cuts off the Garthgell lode, and the two lodes to the south of it, shifting them northward. Again, on the west side of Clogau the St. David's lodes are shifted north from their position in the valley towards Vigra. But without a re-examination of important ground which I saw but for a couple of days, I would not venture to say much as to the amount of these throws. As the north and south faults are so general, and found in so many localities, they must produce great effect. The Lingula flags of the Llawleth owe their position to them.

6.—NORTH-WEST BY NORTH FAULTS: The north and south faults just mentioned are met by a series of faults which are common in the country just described, the Llawleth easterly to Llanelltyd, but not so conspicuous towards Dolfrwynog. They range, roughly speaking, from N.N.W. to S.E.E., or rather N.W. by N.; they are conspicuous at Clogau, dividing the lodes on the west, middle, and east of that hill, but I do not know that they bear lodes, unless the deep ravine in Cwmhesian wood may belong to the series, as it appears to do. They are older than the north and south faults which shift them, and younger than the gold lodes which are disturbed by them. Hence they should be laid down first in this district.

In conclusion, there are four sets of lodes worth much attention in the whole district at present known:—

1.—The gold lodes, which (as rich lodes) rarely go to any great distance from the edge of the lower Cambrian rocks, nor vary very much from the east and west direction.

2.—The north-west by west lodes, richly metalliferous in the Cwmhesian, Dolfrwynog, and Tyddinglwadist districts. These two sets are older than those next mentioned, and are disturbed by them.

3.—The north-east lodes and faults. Auriferous and cupriferous in part, the Cefn Coch Mine being in this set, but seemingly as an exception. The Sovereign and the old Vigra Copper Mines are also in this direction, which is the direction of all the smaller lines of fault in the south-east corner of the gold field—i.e., from Vigra to Dol-y-melyn.

4.—The north and south faults, which certainly disturb all these, and bear copper at least.

As the intersection of two or three sets of faults, each metalliferous, must be prolific, I would direct attention to the cluster of veins about North Dolfrwynog, Hafod-y-bach, the marsh ground of Tyddinglwadist, the line of the Trawsfynydd road from Dol-y-melyn to Pont Eden, the upper part of Cessilgwm, and the lower parts of Cwmynach, where the St. David's and Garthgell lodes are at present lost, but will be recovered by a proper study of the ground. Some of these places are a network of veins. It would appear that lodes worked in the heart of the grey Lower Cambrians are poor in comparison. The best lodes in the district are at present on the junction line between the Cambrian and Lower Lingula flag; but that no exact horizon can be defined at present for the gold lodes is manifest from the fact that Cefn Coch and St. David's lodes are worked on the boundary, that one of the Cwmhesian lodes in the Lingula flag is poor in gold, while Carn Dochan, in much higher beds, has produced favourable results. It has probably more to do with the matrix than has been supplied—a slate rock, alternating with repeated bands of trap-rock, or in the immediate neighbourhood of green stone protrusions, being most favourable. These conditions, together with the indispensable one of numerous cracks and fissures along lines of disturbance, are all fulfilled in the black shales and trap beds which form the lowest member of the Lower Lingula flag, and which contain the remarkable fossil *Paradoxides Davidis*.

Hence the boundary line from Moel Gwynfynydd by Pont Eden, Pont-y-gamla, Dol-y-melyn, Cefn Coch, Gessilgwm, Clogau, Vigra, Llawleth, and so on to Barmouth, offers the best chance for mining as at present understood; but as the same conditions appear to occur all along the western side of the great trap region, which ranges from *Arenifawr* to *Cader Idris*, past the Arrans, and to the east and south of Dolgelly, and as the fractures and complications of these rocks are apparently of the same date, or nearly so, as those of the gold districts, there seems no reason why careful examination of this line should not repay itself by the discovery of lodes of equal or greater value, nor why a search northwards by Trawsfynydd, along the Afon Prysor, should not enlarge the field of operations.

I beg to record my present opinion, derived from a couple of months' severe study of the district, during which I ascertained that the traps of the district were contemporaneous, and not intrusive (except in a few instances, and then chiefly along the north and south lines of disturbance), and that the Lower Lingula flags were in an unbroken and regular series. It is that the gold veins occur in the fissures caused by the first great upheaval of the Merionethshire axis (or the Merioneth anticlinal of Sedgwick). I believe that the infilling of these veins was earlier by a good deal than the lead and silver mines, which, although running in more than one direction, may have been filled at the same time. The strike given to the district, N.E. and S.W., was probably anterior to both of these, but the strike faults were produced after lead and gold veins had been filled, and the north faults last of all. The faults are partly due to the elevation of the whole district, which would cause reduction in the area of the beds by down-throw on the exterior, thus:—(See Fig. 6.) But afterwards, by collapse of the same area, the operation would be reversed, and the masses (*sic*) would be repeated and widened instead of condensed in the following way. (See Fig. 7.) This would double the number of fissures at the same time, the old ones remaining filled with whatever material belonged to the period of original elevation. The following is more hypothetical:—A second or third movement from other directions might and would still further complicate the structure, give rise to other fissures, and re-open some of the old ones, which would thus become in part filled with material not belonging strictly to their own epoch. Hence it may be that if the gold were the original deposit, the infilling of the same veins with lead, silver, &c., may have been of later date, while we know that the newest set of fissures, those from N. to S., contain copper in abundance, while that metal has also been found in plenty with zinc in fissures older than those N. and S. ones now filled with copper. The N. and S. veins were latest of all, and may have been not of anterior date to the close of the coal measures; and we know from other sources that great deposits of copper in beds took place during the close of the Old Red Sandstone, and during the Carboniferous and Permian epochs.

For fig. *Paradoxides Davidis*, see Decade Geological Survey and Quarterly Journal Geological Society, 1854, p. 233. The first specimen found in the neighbourhood of Tyddinglwadist was accidentally picked up by me in 1864.—T. A. E.

Lastly, the district having been denuded by sea action several times, it is only marvellous that there should be any features left by which the course of the old fissures may be traced, and afterwards proved, but the varying hardness of the rocks, and the direction of the escarpments given by the faults, have confined and directed the marine action. The known softness of the gossan or mine stuff has often permitted atmospheric agency to deepen and widen fissures, made thousands of ages ago, and to guide the experienced miner, who traces his lode by its surface gully and its line of springs in the year of grace 1875, though the fissure that now yields his reward was gaping beneath the Lower Silurian Sea. T. A. READWIN, F.G.S. Liverpool, Sept. 22.

ORE BUYING.

SIR,—I am sure that many of your readers will be delighted to have a few particulars of the above, as suggested by your correspondent "Cwm Eifl." It has always been a mystery to me how the smelters were guided in their offers for ores, and I now hope to see some light thrown on the subject. The Editorial note on the returning charge does not inform us whether the amount therein mentioned means per ton or the whole parcel. I QUER.

[It is so exceedingly unlikely that the same charge would be made for smelting 1 ton as for smelting 1000 tons that few except "Iquem" would suppose a charge "per parcel" to be, commercially speaking, possible.]

THE NASCENT COPPER PROCESS.

SIR,—It is well for your correspondent, "C. E.," that he prefers to hide his identity, as by so doing he can smile in a "child-like and bland" manner, and "force" the cards of animus and ignorance without detection. "C. E." is wrong in stating that I leave his question unanswered as to the difference between the Nascent Copper and other wet processes. This question I answered fully about a year ago, and if "C. E." really desires information let him give himself the trouble to search a file of the Journal for my letter.

The working cost of 12s. per ton mentioned by me includes every charge. "C. E." acknowledges that this result is favourable, and asks me to confer "a great boon" upon certain persons by explaining the means I employ. I have yet to learn that the services of a professional man are to be gratuitously given as a matter of course. Let those to whom the information would be valuable obtain it in the regular course of business.

I assert that my precipitate sells for its value in silver, as well as for its copper contents. For example, the last parcel produced 517. 10s. 9d. per ton for copper, and 87. 18s. 10d. per ton for silver. Instead of giving "C. E." the names and addresses of my business connections, I will undertake to buy as much precipitate as he cares to send me, and I will allow him 1s. per oz. for its silver contents, in addition to fair market price for the copper, and then I shall make a handsome profit by its re-sale. After this, he need no longer be "at a loss to know" who is "paying for the value of the silver in addition to the copper."

The question of what is the lowest produce ore that will yield a profit after paying costs both of mining and subsequent treatment depends for a solution upon the circumstances of each mine. In most cases the total combined costs would not exceed 25s. per ton, which would be equivalent to about 1 per cent. of copper and 4 ozs. of silver. Hence ore of any produce superior to this may be regarded as worth mining for, irrespective of the chance of discovering rich ore. In other words, by my system mining may be made to lose its speculative character, and yet retain all its brilliant chances. When the process is properly conducted traces only of copper and silver are left in the ore after treatment.

"Index" is not more candid than "C. E." He wisely refrains from endorsing his observations with his name—I say wisely, since he commits himself to the preposterous assertion that "from the tenor of the letters that have appeared it would seem that the whole and sole contents of these old heaps of stuff are capable of yielding valuable returns of silver and copper per ton." The slightest modicum of common sense will tell him that those who wrote the letters in question are as fully aware as he is that much of every mine burrow must necessarily consist of country rock and other "deads," and that any statements as to quantity and produce apply simply to the ore portions of burrows.

In replying to the first queries propounded by "Index," I mentioned the name of a mining captain of considerable repute and long experience. Whom, therefore, "Index" now sneers at as a "local amateur" I fail to perceive. So, too, with regard to the Queen Mine. If "Index" be, as he insinuates, one of your "practical readers," he ought to know that this mine is being vigorously worked, and is yielding handsome profits; though not being in the hands of a mining company, no reports of its progress appear in your columns from week to week. STEPHEN H. EMMENS. Union-court, Old Broad-street.

THE NASCENT PROCESS.

SIR,—I feel interested in the development of this process, and its application being extended to different localities, testing and proving different descriptions of what has hitherto been looked on as valueless so far as the quantity of mineral it contains. I notice that the Bamfylde Mining Company is about to adopt the process, with what result, of course, we must wait to ascertain. The adoption at this mine will, I think, be of more than ordinary interest to the patentee, also to the company. The locality in which the mine is situated (the north of Devon), so far as its mines have been hitherto worked, has proved to be rich in silver ores. I have seen specimens of argentiferous copper from the Bamfylde Mines producing near 100 oz. of silver to the ton, and according to the sales of copper ores published in the Journal, the average price per ton exceeds that of any copper mine in Devon or Cornwall, parcels of 130 tons at a sampling selling at over 300. per ton, but whether in consequence of the silver it contained I am unable to state. As to the average sales of late it is only known to the executive, or those interested in the company, as no sales are now published as formerly. In the same district is situated the celebrated Old Combmartin Mines, which, according to history, has proved immensely rich in silver-lead ores. According to published reports the average was over 60 ozs. of silver to the ton. But at present on the surface of these mines there are no immense burrows waiting for the Nascent Process, which may be accounted for by the richness of the lodes being reported as worth 1000. to 3000. per fathom, and the small amount of debris drawn to surface. The mines ceased working about 30 years since, and the causes were currently stated in the locality. However, from whatever reasons may be assigned, the leases are again taken, and the mines to be re-worked forthwith; and if it is, as every agent and miner states who has worked in the mines or been underground, true, the proprietors will have a very prosperous future.—Sept. 29. GEORGE EVENS.

STEAM SUPERSEDED—TRUSS'S PATENT HYDRODYNAMIC ENGINE.

SIR,—I was much interested with the letter of "J. C." in the Mining Journal of Sept. 18, and expected to see several letters upon the matter in last week's Journal, but not a word appeared. It seems almost incredible, the idea of obtaining power to any extent, or perpetual motion, with the exception of a starting point. I am not exactly a sceptic, for the idea is not quite novel to me, and I may say the same for many residents of Tavistock, as our old friend Mr. T. J. Barnard two years ago read to several of us his provisional specification (whether ever patented or not I cannot say), by which he claimed to obtain unlimited power from the clouds. I know there was a long rigmarole, commencing with a tank or reservoir to catch rain water as a starting point, and then by his favourite theme, "facts and figures," he mystified us with mechanical contrivances, and wound up by declaring that by his ideas coals would no longer be required for motive-power, and every town would in a few years have any required amount of power, obtained for next to nothing, and conveyed under the streets like gas or water, to be turned on in manufactories or private houses as wanted. Mr. Barnard must rouse himself, or he will lose all the honours. I have been often amused to hear him declare with much emphasis that we of the present day

can form no opinion of what science will do within the next fifty years, when "we shall be able to fly in the air like birds"—another of his pet schemes. The newspapers inform us that a German gentleman is about to cross from America to England in a navigable balloon. Is Mr. Barnard "behind the scenes," or connected with this matter; but, joking aside, where can an engine of 121-horse power, as described by "J. C.," be seen at work? I would willingly make the journey to any part of England or the United Kingdom for the express purpose of beholding such a wonder. Sept. 27. TAVISTOCKIAN.

THE DIVINING ROD.

SIR,—According to both promise and request, and also as the progenitor of the discussion now in hand, I write a few lines in which, if I claim no credit for originality either in thought, view, or opinion, I deserve no censure for plagiarism. I am no dowsing (although I have tried the rod hundreds of times over the same ground, and precisely the same rod that bowed gracefully to the earth in the hands of another was stiff and independent in mine, like good old Dr. Abernethy when soliciting the suffrages of his fellow-citizens for a post of honour), neither am I related to any, consequently selfish motives cannot be imputed, mercenary causes cannot be ascribed, "padding my own canoe" cannot be charged; but a desire to see such doubtful questions once and for ever settled, such irascible disputes eternally decided, such almost ineffable enquiries punctiliously answered, such seditious controversies everlastingly terminated, and such perplexing problems either satisfactorily solved or, Lucifer like, "hopelessly" falling to the ground, has been my sole object in giving publicity to a few facts which have been gathered from different districts, and from a variety of sources, and for which I am prepared to give vouchers, the names of whom parties may have on application by post.

Of the origin of the Divining Rod Mr. J. S. Rhodes, writing to the "Newcastle Weekly Chronicle" for January, 1875, says—"That the divining rod has been handed down from the ancient Egyptians and Persians there can be no doubt, and how long they were acquainted with the subject before the time of Moses, perhaps the British Museum, with all its ancient records, could not impart the inspired knowledge. In the book of Exodus we find that Moses, and also Pharaoh's magicians, used the rod. In chap. iv. we find 'And the Lord said unto him What is that in thine hand?' And he (Moses) said a rod.' And further on we find the magicians all had their rods." Pryce tells us, on the authority of Howson, that "The first inventor of the virgula-divinatoria was hanged in Germany as a cheat and impostor."

Of the antiquity of the divining rod, as used in this country at least, there cannot be any doubt, as the evidence is of a threefold nature—tradition, history, and deduction. Tradition is not always to be disregarded, as Reid in his History says that the South American Indians have an incorrect, though distinct, knowledge of the Deluge more than 4200 years ago. The inhabitants of Mousehole and Penzance, in 1595, voluntarily surrendered their town to the Spaniards, on account of an old prophecy handed to them by tradition; and the writer himself has spent many a pleasant hour with the people of the 18th century by tradition. If we ask old persons about dowsing they readily know what is meant, and often give an account of what they heard their fathers say about it, and thus it has been handed from generation to generation until it has reached us, in spite of the missiles hurled at it by Education and Science; and that it has not exploded like unto witchery with its multifarious ramifications before the breath of reason has a tendency to convince one that the arguments and facts in favour of the divining rod have not yet been satisfactorily coped with. Agricola in the beginning of the 15th century wrote a long article on the prevalence of the divining rod, as also does Pryce in his Mineralogia Cornubiensis. It is impossible for a miner to clear old and defunct workings without asking himself by what method could our forefathers have discovered these lodes, as the modes adopted by us were not used by them, as is plain from the surroundings of the place, as there is not a trace of random working or of speculation, but of certainty in the results; and he pants for Cuvier's commanding voice, which said "Live" to the bones at the French charnel-house, that he too may raise to life and ask but one question of the deceased fathers—"How did you find your lodes?" But as this is impossible, he reasons and investigates, and as the sum total of his studies he concludes that it must have been a simple and rude process, and what more simple and inexpensive than the divining rod, which is confirmed by the reflection that nowhere has contradictory evidence been against its use.

The National Cyclopaedia says, under the heading of the Divining Rod, "A forked branch, usually of hazel, by which it has been pretended that minerals and water may be discovered in the earth, the rod, if slowly carried along in suspension, dipping and pointing downward, it is affirmed, when brought over the spot where the concealed mine or spring is situated. The form of material and the mode of using the divining rod of the modern miners and water finders seem to be superstitions of comparatively recent introductions. Many persons of pretensions to science have been believers in the powers ascribed to the divining rod." Chambers's Dictionary says that "The virgula is a forked branch in the form of a Y cut off a hazel tree; the person who bears it walking very slowly over the place where he suspects it may be, the effluvia exhaled from the metals a vapour from the water impregnating the wood, makes it dip or incline, which is the sign of a discovery." Agricola writes "There are many and great contentions about the forked rod. Some say it is of the greatest use in finding veins, others deny it. Those who approve of it recommend a hazel twig, especially if it has grown over any vein." Again, some use different wood for the different metals—hazel for silver veins, ash for copper, fir for lead, a fork of steel or iron for gold. Agricola, after treating the subject fully, concludes his observations by terming the rod "uncanny." Pryce, in his invaluable book, from pages 113 to 116, seems to have had great faith in the efficiency of the rod. Sir Walter Scott, in that most interesting novel The Antiquary, touches the subject of dowsing, and describes a German in search of water, who is made to say—"Here is de place, and if you do not find de water dere I will gif you all leave to call me an impudent knave." Mines and Mining concludes a short article as follows:—"Extended intelligence has now nearly exploded the superstition, though as late as the year 1830 a professional performer of repute resided at Redruth. Some suppose that the Phœnicians left the practice here (in Cornwall), and however this may be, it is of very ancient date." In Mining Engineering, G. C. Greenwell, F.G.S., writes—"I have seen the rod used, and I have seen it turn and point downwards, apparently without the will of the operator; but whether there was a vein or not at the identical spot was not investigated. The dowsing was blindfolded, and led again and again, with proper precautions, over the spot, and the rod then twisted his hands forward until the single end, from being held upwards, pointed vertically downwards, and certainly, as far as I could judge, without any attempt at deception on the part of the operator." Very many such quotations could be easily given.

I now propose to give an account of one day's proceedings in the search for knowledge on this subject, by no means more than an ordinary day, as many such could be furnished. After travelling about four hours from this place I met a man apparently going to mine, and after a few observations about the dulness of the metal markets, his opinion was asked on dowsing. He replied (these answers were reported verbatim, and you have them nearly as such, but not the pronunciation) "I have not seen enough of it to give an opinion: at one time I think there is something in it, at other times can't see how there should be. Mr. E.—, of L.—, a retired gentleman farmer, will tell you something upon it, he being a dowsing." After much trouble I found the gentleman, and told him my mission. "Me," he replied, "I never dowsed in my life. Never believed in it. Always thought it a foolish thought. Father used to dowsing, and I know that four lodes were cut after his dowsing." Whilst we were conversing another retired farmer came and joined us in our "small chat," who was not only a disbeliever in but an exterminator of the said rod, but he too acknowledged having seen the aforesaid gentleman's father use the stick, and three lodes other than those mentioned above were found as the result of dowsing.

These two gentlemen told me about another celebrated dowser, who lived about six miles distant. On my way to see him I fell into conversation with a gentleman who told me that his father was a dowser, and that he used to put six pewter plates on his breast, to neutralise the effect of attraction on the rod. He also said that his father had found several lodes and wells. "At one time," he says, "when I was a little boy, my father was asked in a neighbouring parish to dowse for water, and after passing over the ground several times he marked a place, and the parties began to sink, and after sinking a few feet, instead of water there was the carcass of a horse, with its legs uppermost, and on which were iron shoes, which must have attracted the rod." The same gentleman also informed me that he and his cousin were together at Wisconsin, United States, and were felling some trees, when one of the axes was lost in the tall grass, and a long search proved useless. His cousin bethought himself of the divining rod, and the axe was soon found. (Was this the way in which Elisha found his axe? I leave this question to theologians.) He also added—"Since I have been home I have only seen it used once, and the dowser, unknown to the locality, traced a lode two miles by crossing and re-crossing it." Another gentleman was met on horseback, whom my colleague knew, who had never seen the divining rod tested, but gave me the name of one whom it was reported had discovered several lodes. But be this as it may, I saw a mine agent offer him 5s. to show a lode in the sett, but the offer was refused. I mentioned it to two others I met on the road, and one, a young miner, "never heard of it before;" the other had found "hundreds of lodes." Did I not tremble for my reputation, as only the previous week was the letter inserted in your valuable Journal on "Ancient Discovery of Lodes," the tenor of which went to show that the ancients were ahead of us in this particular, but like the thousands of cats in Tregellas's Cornish tales, which dwindled to "Grammar's cat and ours," so did the "hundreds of lodes" get "beautifully less," as gentlemen say of their cabinets after a visit from a mineralogist; and it is my firm belief that that man never dowsed a lode in his life, as he evaded all questions about the exact localities. I called at a gentleman's assay office, where there were four persons seated, and shortly we imperceptibly glided to dowsing. No. 1 stated that the agent at a certain mine sunk several pits to find a lode, but was unsuccessful. At last a young man marked the place where to sink by means of the rod, and the lode has ever since been worked, and much mineral raised. No. 2 said—"My brother could dowse, and found several lodes, but I could not." He also remarked that "Old—can dowse," who was the very man I came to see. No. 3 said—"I don't think that old—can dowse at all, as I once saw him cross a large lode without the rod ever turning." And again—"I don't believe in it." No. 4 "thought there must be something in dowsing."

After a fruitless search for those to whom reference was made by the several parties, we alighted on a group of three persons at the end of a village, two of whom were ignorant of the phrase, whilst the third, whose name I do not know, "saw a lode cut in the higher side of the parish by means of a stick." On my way home I saw a man in a field cutting hay, and thinking a little respite might invigorate him, we fell into conversation, and he himself was, fortunately, a dowser, and had discovered about a dozen lodes by means of the rod, on one of which he was liberally paid for his labour, working it as a "free sett." I saw another man, who also said he had found at least a dozen lodes, and gave me references as to the accuracy of his statements, and is willing to find and show a single lode for 10s. I saw two other persons who had seen the rod used both successfully and unsuccessfully, and their opinions were, consequently, oscillating. I arrived home about 11 P.M., having walked a distance of over 25 miles. EDWARD SKEWES.

Gwinear, Sept. 18.

[To be concluded in the Supplement to next week's Journal.]

THE DIVINING ROD.

Sir,—I ought, perhaps, some of my friends may imagine, to be very well pleased that a gentleman who holds such an exalted opinion of himself as "Scrutator" should notice any lucubrations of mine, as he has condescended to do in the Journal of Saturday week. He, however, is a very severe critic, and neither spares contempt nor denunciations towards those who do not share his opinions. I, unfortunately, am not the kinsman of an archbishop, and if I were it would not occur to me to publish it. Neither was I educated at Rugby, and even if I were favoured by the culture bestowed at Eton or Harrow, more celebrated places, it would strike myself, dull as I am, that I was a very odd man to suppose that the readers of the Journal would care whether or not.

"Scrutator" derides me for quoting the authority of that celebrated preacher—the Rev. Mr. Spurgeon. I never quoted his authority in connection with the divining rod, or mines or mining; his knowledge on such subjects is palpably on a par with "Scrutator's" accuracy. I simply quoted a shrewd saying by a man who has a great reputation for shrewd sayings, applied to one of the hobbies which "Scrutator" so fiercely rides—spiritualism. It is wonderful that your correspondent should be so sensitive to a slighting allusion to the vagaries he advocates when he sets the bad example of sneering at a gentleman who has not intruded upon this controversy as a possibly great authority among "methodistical conventicles." I am quite sure, at all events in courtesy and charity, few "methodistical conventicles" would set the bad example of "Scrutator's" unpolished sneer at another gentleman's religious associations or convictions.

My opponent, if I may call him so, taunts me with asking for the *rationale* of the limited support given to mining, and then affirms that I neither "wanted an answer nor waited for one." I did not enquire at all after the reasons why mining is not as prosperous as formerly; the reason "Scrutator" gives are for the most part too true. I enquired what was the *rationale* of the divining or dowsing rod. It is uncivil to say I did not want an answer; I really did, and think it a pity the gentleman did not learn at Rugby to believe that others might be as sincere enquirers as he is. "Let each esteem others better than himself" is a lesson in ethics which, if taught at Rugby, one of its pupils, anyhow, forgets. As to my not waiting for an answer, I am waiting, and when I see column after column of such desultory and inappropriate dissertation upon "everything and upwards," as an Irishman would say, as "Scrutator's" pen has produced, I am afraid I need never hope to have an intelligible answer from him.

I, of course, will not follow your correspondent into the mazes and thickets of mesmerism and spiritualism, our subject is a practical one, but I may say *en passant* that I am informed on most excellent authority that the great Doctor Wheatley never presided either in London or Dublin over any association of mesmerists, or over any institution connected with mesmerism. Your correspondent covers the authority of Sir Henry Holland with semi-ridicule, and points out the path of two physicians devoted to mesmerism as the more excellent way. The reference is unfortunate; one of these unhappy gentlemen died in a garret supported by charity, and the other in circumstances nearly as destitute, because both lost their practice through following the "Will o' the wisp," after which were "Scrutator" to be our preceptor, all the readers of the Journal would also wonder, with perhaps as unfortunate results. The once respectable practitioners referred to lost all their clients; no one would consult them because of the uncertainty of their doctrines and their ways, a very general and very reasonable impression having prevailed that they were demented.

As to the tone of my letter, Mr. W. rebukes my attempts at wit. The attempt would be a vain one, and I shall not adopt the *tu quoque*. I like a little harmless badinage, we are used to it in Cornwall. As to wit, however, mine would be about on a par with my censor's wisdom, and the less said about either the better. With regard to the question of the virtues of the divining or dowsing rod, I offer no opinion. I wrote as an enquiry, and notwithstanding my long acquaintance with mines and mining, I never saw the wonderful performances attributed to it, nor had the like authenticated to me by reliable witnesses. But it is quite certain that if it do possess the extraordinary properties alleged, in spite of all the impediments to successful mining necessitated by "Scrutator's" capitalists guided by

its miraculous indications will no longer hesitate to invest in mines, but following its guidance will be sure of their ventures. I suppose it can hardly be an error to say that with no better evidence than that adduced in this controversy I must remain sceptical.

London, Sept. 25.

THOMAS SPARGO.

ENGLISH MINE AGENTS—No. IV.

Sir,—Before dismissing this subject, there are one or two things more I would like to name, which are great obstacles in the way of successful mining, as well as an intolerable grievance to mine agents—the interference of mine brokers and merchants. You have the opportunity of knowing, perhaps, better than most people that a large number of them cannot hold a situation for any length of time unless they can manage to please those persons.

With regard to the first, their object is not to get money by legitimate profits made out of the mine, but rather by the credulous public. In order to do this the shares must be run up to a fabulous price, and often this can be done only by getting the manager to write fictitious, or at least reports that cannot bear corresponding results. To some men this is a great temptation, for it may be they are dependent entirely on that source of income, and to lose their berth would be to lose their living, and they would rather make a compromise that meet with such a fate. I cannot hold with men who will be thus led away; I have always seen the true man to get on best in the end. But what are we to do in such cases? Since the world is as it is there is no use dealing with it as though it were in a better state, and since mine agents are as liable to be tempted as other men the better way is to keep them as far as possible out of the way of temptation. I have known many good men ruined in this way. But I must say that they have no one to blame but themselves, for had they not made themselves servile to those who pretended to be their friends they would be loved and honoured, if for truth's sake only, for however false a man may be himself he admires truth in others, and so if an agent should by falsehood make a small gain that gain is only for the time being. I might give you examples of this without end were it necessary, but you are as well acquainted with these things no doubt as I am. It is a good thing for mining that those agents are in the minority, and as mining men we should congratulate ourselves on having examples of noble sacrifices made by a host of our mine agents for the sake of truth and the interest of the public. And we have still men who cannot be manipulated by the brokers, for rather than compromise their conscience they will starve. Yet whatever may be a man's position in life it is a grievous thing to be thus treated, and how painful it must be to know that in order to keep a conscience void of offence towards God and man he must resign his birth—his only source of living.

The same thing applies to the second class of persons who take interest in mines for the sole purpose of driving their own trade. Although these men talk loudly of the great amount of good that they have done for mines, yet it is my firm conviction that many of them have done more harm than even the heavy drop in the price of minerals. I have known many mines where the managers have been bound to take whatever kind of materials they please to send, and where the manager has refused to take them he has met with his discharge, either directly or indirectly. For example: Not very long ago a mine was started in North Wales by a public company, and, of course, materials were wanted for the various departments of operations. Instead of letting the manager, who was a sound practical man, choose for himself the kind of things he wanted, and those that would be the most useful, the merchant came himself and decided what should be used. The things were sent; such things were they that they never could be utilised, and because that the manager could not do an impossibility he was dismissed. Many such examples might be given in Cornwall also, but they are so well known that I will not occupy your valuable space to name them.

I am glad to see, Sir, that mining companies are being awakened to this, and that instead of paying merchants retail prices for materials, they are beginning to import from the first hand themselves. It is my conviction that but few merchants would take shares in mines if there were no hopes of their trade being patronised. I speak now more particularly of local merchants who deal in those kind of things. Let a manager be free to purchase at the best market, and companies will find at the end of the year that there will not be so many heavy balances against them.

Give mine agents fair play, and I will venture to say that in the course of a very few years mining will be carried on as successfully as in former times. Another important thing which an agent needs is sympathy. To be without sympathy is just as bad as to be kept on a miserably low salary, but it is often the case that both these evils meet in the same person. Of course, it is an easy matter to gain sympathy when a mine is making handsome dividends, that is when sympathy is not so much needed; but when calls are constantly being made, and an agent craves the sympathies of his employers, it is a most difficult matter to obtain them. It is not enough many times for a man to have the care and anxiety of the present and future of the mine, but also bear frowns and black looks from directors and others. Many people have very mistaken notions of the thoughts and feelings of the mine agent, if I take what they say to be their real thoughts concerning him. They imagine that he has an easy life, that he has no thought or care as to whether the mine pays or otherwise. Such an idea is infinitely far from the mark. His concern for the welfare of the mine is more, vastly more, than any one's beside. If a man cannot be paid as much as he deserves give him sympathy.

OLD MINE BURROWS.

Sir,—Whoever wrote the letter signed "Index" may be congratulated upon having indited a few sound, sensible questions and remarks, capable of either benefiting a good cause or utterly marring a bad one. Such honest critising productions I most cordially invite, and sincerely trust that "Index" will next week contribute some further observations, and at the same time publicly give his real name and address.

The Beeralston Burrows are no mere optical delusion, and I think "Index" will agree with me that the entire burrows in the whole of the Beeralston district represent not 100,000 tons but more than 200,000 tons. Quoting a phrase of your correspondent's letter—"To all men of experience it is well-known that a large proportion of the best burrows that can be found is entirely worthless, and that the remainder requires much time and labour in the recovery." I agree with him entirely, and hence my reasons for so eagerly aiming, by improvements in furnaces and general manipulations, to secure a commercial success upon ores taken from underground giving as little as 1 per cent. copper and 4 ozs. silver per ton of stuff, of course including the mining for and obtaining the article. I have far more faith in mines than in old mine burrows, for can any sensible practical man be found to dispute that burrows are (with some exceptions) simply a combination of lodey matter and country, the lodey matter naturally not seeming with mineral wealth, and the country containing nothing but extreme poverty and darkness visible, which unfortunately brings the whole to a very minimum of reality. I do not attempt to discuss the question of any particular mine or burrow (save Beeralston) yielding ores of sufficient value to pay for working by the Nascent copper process. This is a matter for shareholders of mines, through their agents, to determine, as there can be no great difficulty in ascertaining whether burrows really give the requisition for this process—that is, 1 per cent. copper and 4 ozs. silver to the ton of stuff. As regards lodes, surely a "keenly" copper mine will average the little mineral required when the lodey matter, that is the lode entire, can be taken down and sent to surface without being depreciated by coming into contact with the country, and certainly if a healthy copper lode contains only 1 per cent. to-day, there is every reason to expect richer deposits to-morrow as it were, more particularly when not a fathom of lode will be left unexplored.

Referring again to Beeralston burrows, "Index" should have refrained from sneering at the assays of "a local amateur." Of course, he means Capt. W. Knott, who is certainly one of the best silver assayers in England. However, public analysts have made as much as 30 ozs. silver per ton of maudic found in the rubbish piles; that

there is "country" mixed with them I well know, but the wheat can be separated from the chaff by hand-picking, or stamping the whole, leaving the drags and buddles to effect concentration, when, in order to secure the silver, the enriched reduced mass must be mixed with copper ore, and worked by the Nascent copper process. I could enter very fully into the matter of these burrows, but I am not disposed, for the simple reason that it does not signify one iota to me whether any particular mine or burrow throughout Devon or Cornwall is either rich or poor. I put myself down now as the miner's doctor—quack, if you like—professor, if you wish. *En passant*, undoubtedly there are many poor "bals" and heaps of debris with no pulse or life at all; then leave them in tranquil repose, but if any representatives of mineral properties are convinced, and can, further, satisfy me, that they are really prepared to turn out not less than 10 tons per day, 1 per cent. copper and 4 ozs. silver, with fair prospects of quantity and quality progressing instead of retrogressing, the Nascent copper process, aided by "economical and effectual chlorination," will step in, and convert calling mines into dividend-paying ones. Should these few lines catch the glance of Mr. Basset perhaps that gentleman may feel disposed to publicly assist me by using his interest and purse to introduce the process upon one of his properties. He may or may not consider me entitled to his notice. The only credentials I can offer are that I have always come boldly to the front with suggested improvements, and do not now covet the 100%, which, if won, can go to any charitable institution he may elect, but if he will kindly render assistance, and permit me to erect small works under his own eyes, and my ideas, a few weeks would give practical results, and be the means of convincing "One and All." Trafalgar House, Plymouth, Sept. 29. THOS. J. BARNARD.

WHEAL UNY, AND THE LATE ENGINEERS.

Sir,—We request space for a reply to Capt. Rich's letter, in the Supplement to last week's Journal, and we shall confine ourselves in the first place to what has given rise to his letter, and his personal attack on us—"our recommendation that the present favourable opportunity should be taken to strengthen the tubes of the second-hand boiler now being fixed to Hind's engine." That opinion we adhere to, and it is from an enquiry into the cause of boiler explosions that have unfortunately come immediately, and others that have been brought, under our notice that we have so strongly advised Capt. Rich that every opportunity should be taken to strengthen the tubes of the boilers. We have recommended only the best known methods, and our opinion we are willing to submit to an independent test. It is now nine years since the last explosion took place at Wheal Uny, and we then submitted all the particulars of that explosion to an eminent authority on the strength of boilers and the cause of their explosion, and that opinion we had printed and circulated. It contained the following paragraph, which we more particularly called attention to:—"I have no hesitation in saying that all boilers with as large a flue as this one had—4 ft., and 30 ft. 8 in. long, made of 7-16ths plate—can only be worked with steam of 40 lbs. on the square inch at considerable risk. All such flues should certainly be strengthened with encircling hoops, and the sooner this is done the better."

Every opportunity was being taken of carrying out this advice up to the time of Capt. Rich being appointed manager, but it has not been favourably received by him, and, consequently, nothing further done. Some of the boilers at Wheal Uny, South Carn Brea, and South Condurrow have been so strengthened, and arrangements had been made with the late managers that the others should be so treated as occasion presented itself.

Capt. Rich states—"I have strengthened the tubes of the boilers, not by brick arches, as stated by Messrs. Hocking." We repeat that he did have built a brick arch in the tube at South Carn Brea in October last, and if it is not there now it was at a recent date. As this is a matter of veracity, we appeal to Capt. Knottwell, the resident agent, as to whether it is true or not. Another plan had been previously tried at Wheal Uny—building longitudinal walls of brick inside the tubes of the boilers, which, as might have been expected, proved a complete failure.

As to the testing, it is true we left a note for Capt. Rich, he being underground when we called, recommending that the stamps boiler then undergoing repair should be tested, and we made a charge of 10s. as an acknowledgment for the use of the tester. Our Mr. J. Hocking, jun., is resident within ten minutes' walk of the mine, and there are scores of the workpeople who pass his door everyday. It would have been a very easy matter for Capt. Rich to have sent an intimation when it was proposed to be tested. It is what is always done, or a time appointed, both by ironfounders and other managers, and in our view not unreasonably so. Had we been made acquainted, and we then failed to put in an appearance, we should have been justly censured for neglect.

The history of the two engines he has mentioned, as illustrating our "engineering principles," illustrates more so the difficulties engineers have frequently to contend with in the endeavour to meet the wishes of shareholders, to enable the mines to be kept afloat until financial and other circumstances enable them to have effective machinery erected. South Carn Brea engine, originally a bull engine, was converted into a beam engine when first erected there on the old shaft. Soon after a 26-in. cylinder was put in; when removed to the present engine-shaft it had a new beam, and when the mine was set to work by the present company the 26-in. was taken out and replaced by a 36-in. Now, these and other minor alterations, extending over a period of 25 years, were alterations to suit the exigency of the moment, in the expectation that the day would arrive when a good shaft would be sunk, and engine erected for effectually developing the mine. This was commenced by the old company, and sunk to a considerable depth, and it has been resumed by Capt. Rich, and sunk to very nearly the bottom of the mine from the point left by the former workers.

Wheal Uny engine we had nothing to with until some years after it had been at work. As the load of the engine went on increasing from the increased depth of the mine, and was worked up to its extent of power, a change became necessary, and the 50-in. engine was converted into a 60-in. This, however, was looked on at the time as a temporary expedient only, the sinking of Hind's shaft, and the erection of a powerful engine thereon, having been at the same time resolved on. This is now nearly completed, and when done will place the mine in a good position. But the shaft was sunk to a considerable depth and engine erected before Capt. Rich succeeded to the management; he has been simply carrying out, and we believe reluctantly, the course chalked out by his predecessors. Mr. Edward King, if this should come under his notice, can verify this. The question was raised soon after Capt. Rich took the management whether its sinking should be continued or not, and Mr. King visited the county purposely to investigate it, and after taking the opinion of two or three independent authorities determined on its continuance. It will prove to be the salvation of the mine.

The saving of coal which Capt. Rich takes credit for is easily explained. The alteration in the engine referred to above was the principle cause of it, and we were under the impression it was greater than he has claimed.

Capt. Rich says—"The old engine has been pulled to pieces, the main beam itself has been broken twice, and we have no end of trouble thereby; at one of these smashes Mr. John Hocking, jun., passed by," &c. It is perfectly true the old engine has been pulled to pieces, but it has been brought about principally by the failing of the rods in the shaft, resulting in serious breakages. It is also true that our Mr. John Hocking, jun., was passing on one occasion when one these pit-rods broke, but it was on the assurance of Capt. Rich's son (who is an agent of the mine) that there was nothing done to the engine, "that it was only a rod broken," that he did not stop. Breaking a rod was looked upon as a very small affair if no further damage was done.

Capt. Rich, in another paragraph, would lead one to think that we had not been inside the whim engine-house (his words are "seen the whim engine inside") for years; if this meaning is intended to be conveyed it is wholly untrue. We did make the mistake referred to in the last paragraph—charging fees for a 24-in. instead of a 22-in. engine, and we expressed our regret for having done so as

soon as it was pointed out to us. Capt. Rich asks—"Have these gentlemen forgotten at the adjoining mine that in putting in a second-hand mining engine they never once went inside the door of the engine-house, or superintended it in the slightest degree?" Surely Capt. Rich must recollect our assistant (Mr. James Hocking), who carried out our instructions, and that we were responsible for what he did on our own behalf.

Another portion of Capt. Rich's letter we must refer to, and we have done. He says: "I serve the shareholders, and them only; I watch their interests to the best of my ability, and give but little attention to the commissioned agents of ironfounders, who, as is too often the case, have but one object in view in ordering machinery—fees. Whilst I am honoured with the confidence of the shareholders I consider it my duty to buy in the cheapest market and sell in the highest, regardless of privileges, customs, or commissions." It is true that we have an agency for Cowburn's patent safety valves, boiler mountings, &c., which we have advertised our connection with six months to a time; further than this, the insinuation contained in the above we wholly disavow. In every case where we have any machinery or repairs to order we invariably ask and the orders are always given in accordance with the manager's directions. At the present moment we have work being executed at the following foundries—Harvey and Co., Holman, Tuckermill, and Co., Bartle and Co., and Perran and Co., all in accordance with the managers' instructions of the mines for which it is for, and we will venture to assert that these gentlemen have agreed for the same at prices which will bear comparison with any that Capt. Rich has agreed for.—*Redruth, Sept. 29.* JOHN HOCKING AND SON.

DIVERSION OF WATER-COURSES.

SIR.—The dismissal by Capt. Rich of Messrs. Hocking and Son, the engineers of South Carn Brea, was in effect confirmed by the adventurers, at their meeting on Friday last (Mr. Walter Pike in the chair), and as it was evident that Messrs. Hocking and Son, being paid servants of South Carn Brea had, as committeemen of the adjoining mine—West Basset—deprived South Carn Brea of a stream, the use of which they had enjoyed for 30 years, and which, moreover, is secured to them by their lease, it is difficult to see what other course the adventurers could have adopted. Capt. Rich, as principal officer of the adventurers (there being no committee), gave the engineers, after consultation with the purser, the usual month's notice, so timing it that it would expire at the date of the meeting of the adventurers, who could thus confirm or rescind the notice as they thought fit. If Messrs. Hockings' statement of the case be correct, the apparent injustice of the lord seems to ill accord with his recent much-noised generosity. Messrs. Hocking write, that "the simple fact is that the use of the water in question was offered to the West Basset adventurers by the agents of Mr. Basset without solicitation or suggestion on the part of anyone connected with West Basset, and this statement that we used our influence, and we will add any influence whatever, to divert it is destitute of a shadow of foundation in fact." Capt. Rich explained that the West Basset people had now got their stamps on the South Carn Brea sett. Whether that was right or wrong he would not stop to discuss, but what he particularly desired to call their attention to was this, that the water which had been running through the mine for upwards of 30 years, of which they had always had the full use, and which was very valuable to them in more respects than one, had been diverted from its course, and as a consequence, they had been obliged to pump up copious water from underground, to the great loss of the mine. This water had been diverted for the use of the West Basset stamps. The moment the water was gone he wrote to Mr. Cartwright asking him whether this proceeding on the part of the West Basset people had the sanction of the lord. The reply which he received was that the South Carn Brea adventurers only used the water on sufferance, and on examining the lease he found that they were entitled to use it, and to compensation if the water was taken away. He made this known to Mr. Cartwright, but receiving no reply he adopted another course, which was to discontinue with the West Basset committee, giving them notice pending the next general meeting, that they were not to dress or carry away tin or other ores from the property without first obtaining the sanction of the shareholders of South Carn Brea. Then he again put himself in communication with Mr. Cartwright, telling him what he had done, and asking him that the matter might be brought under the notice of Mr. Basset. He was also anxious that the matter might be amicably arranged. He added that it was neither fair nor honourable that they should be deprived of water (to be used to reply to another mine), of which they had had the use for so many years. After this he sent to Mr. Hocking the notice which was now the subject of discussion. The question of the right of an agent was discussed by Messrs. Hawke, Hick, and Abbot, and Capt. Nancarrow. Mr. Heard did not blame Mr. Hocking for looking after the interests of West Basset, in which he had a large holding, but being the engineer of South Carn Brea, it was his duty to have consulted the agents before taking any steps for the diversion of the water. At the same time it was a very serious matter for one agent to take upon himself to discharge another's duty, and no doubt whatever that Capt. Rich acted as he did with the very best intentions. The purser said it was quite clear that the manager and the engineers could not work amicably together, and he therefore suggested that the latter should resign rather than that a resolution should be passed dispensing with their services. After some further discussion Mr. Hocking placed his resignation in the hands of the adventurers, but again repudiated the charge that had been made against him. The resignation was accepted, and a resolution was passed, on the motion of Mr. Heard, expressing the entire satisfaction of the meeting at the course taken by the manager with regard to the diversion of the water-course, and hoping that the water would again be made available for the mine.

Redruth, Sept. 29.

TINGTANG CONSOLS.

SIR.—Since the depreciation in the value of tin persons of capital and mining predilections have turned their attention to copper mines, preferring those which have not been very extensively worked. Having spent a few days lately in Gwennap, I have been looking about for eligible mining locations, and I have found two, one of which is Tingtang Consols, and concerning which I beg to submit a few particulars, that gentlemen wishing an outlet for their spare cash may consider them. I find that in the year 1816 the late Messrs. Williams, of Scorrier, commenced operations here, which were continued till the year 1832. From the year 1817 to 1832 the copper ores raised realised 225,000*l.* Very little has been opened under the 100 fm. level, although the deepest shaft is 140 fms. under the adit. In the year 1846 the late Capt. Wm. Martin, of Tresavean, a first-class miner, formed a company for re-working this mine, and worked it about two years, or a little more, but for want of capital he could not work it efficiently, the shares being largely held by men of limited resources, but they sold about 3000*l.* worth of copper ore. Captain Martin, I believe, was anxious to sink, but the want of funds prevented it. It is well known in Gwennap district that Tresavean and Treviskey Mines at the south, and the United Mines and Consols at the east, of Tingtang made the greatest profits under the 150 fm. level. Tresavean gave 450,000*l.* profit, the Consolidated Mines about 600,000*l.* (under Messrs. Taylor), the United Mines (Wheal Clifford, &c.) very large profit, besides several others. (Wheal Squire, contiguous to Tingtang, was also very rich. This mine, like Tingtang, is comparatively shallow. The great cross-course, sometimes called the "County Cross-course," is the boundary between Wheal Moyle, part of Tingtang Consols, and Wheal Squire.

In Tingtang there are numerous lodes, a wide elvan dyke, and several cross-courses. The great lode is 4 ft. wide, middle lode is 2 ft. wide, Roach's lode is 4 ft. wide, Old South Hot lode is 3 ft. wide, Flat lode 30 in., mundic lode 20 in. There are several other lodes, but the operations of the first company were confined to three lodes: viz., Old lode, Roach's lode, and Middle lode, the latter being the most productive.

Tingtang is very far from being an exhausted mine; in fact, it may be termed a *slightly worked* mine. About 10,000*l.* expended in machinery, &c., would be sufficient to commence sales of copper ore. About 10 years ago a company was formed to work the mines; but after drawing off the water, and doing nothing in the way of exploration, it was stopped by unfair means—the pit-work being now in the shaft, from the adit level to the bottom. The machinery required for developing the mine should consist of an engine of 70-in. or 80-in. cylinder for pumping, and a steam-whim of about 24-in. cylinder, with their usual appurtenances. The adit in the mine is about 40 fms. deep.

A good account-house, engine-house, whim-house, smithy, carpenter's shop, sawyer's house, material and store-houses, barracks, timber and iron-yards, &c., are ready for occupation, having been kept in the hands of the lords for future adventurers.

If a limited company be formed for working this mine, the capital should be about 30,000*l.*; but if worked on the cost-book system, 10,000*l.* capital is ample to begin with.

I have in my possession copies of the reports of Capt. W. Martin, aforesaid; Capt. Elisha Ralph (deceased), late of Poldice Mine; Capt.

Jas. Rowe, manager of Nanglies and other mines; and Capt. R. Gray (late of St. Day), formerly agent in Clifford Amalgamated (United Mines), all of which speak of it as a first-class mining property.

It must not be supposed that mining in Gwennap is come to an end; it is reviving, the discovery in West Poldice giving a stimulus to mining enterprise in that neighbourhood. I am pleased to learn that one of the honorable M.P.'s for Truro (Sir F. M. Williams, Bart.), is the holder of about half of the shares in West Poldice, which are about 1700 in all. He and his late father (Sir W. Williams) expended many thousands of pounds to keep on the working of Clifford Amalgamated and Poldice; and I hope that West Poldice will recoup all their losses, and more than that.—*R. SYMONS.*

Truro, Sept. 25.

TERRAS MINE.

SIR.—It has been alleged by some persons, "whose wish is father to the thought," that the statement made by Capt. M. Rickard, as to the returns of tin from Terras Mine, was untrue. He stated that about 7000*l.* had been realised by the sales of tin during the working—i.e., between July 29, 1870, and May 2, 1873. I am enabled to state, from the authority of the tin-smelter who purchased all the tin, that between these dates 89 tons 8 cwt. 3 qrs. 24 lbs. of black tin was received by him, and that the amount paid for the same was 7048*l.* 9s. 1d., thus proving that Capt. Rickard's statement was correct. I find that the amount expended in plant and operations was about 19,000*l.*, the plant alone costing 7000*l.* out of that sum. There are many mines in more popular districts that have not done so well; and this would have done better if the expenditure had been entirely under the control of Capt. Rickard, which it was not.—*Truro, Sept. 25.* R. SYMONS.

CALDBECK FELS CONSOLIDATED LEAD AND COPPER MINES, CUMBERLAND.

SIR.—I was appointed manager of this mine on April 3, 1869. The then secretary informed me that operations had been carried on by the present company between five and six years, that the produce of the mine for that period would average about 30 tons a month, and the result was the company had spent the whole of their capital, and had no funds whatever, and if the mine was carried on it would have to be done upon its resources. I, however, examined very carefully every part of the mine then opened, and placed the workpeople where the indications were most prominent for a greater yield of ore than hitherto, and managed to augment the sale the first month to 50 tons, 20 tons of which had been sold heretofore. I attended a meeting of the board subsequent to this sale of ore, and the directors expressed themselves highly satisfied with the results for April, and they asked me whether I could get as much ore for the ensuing month. I replied that my course was clear to do so as regards the prospects, but the dressing-floors and dressing appliances I considered altogether inadequate for the future requirements of the mine; but, by an extension of floors, and the erection of more suitable dressing apparatus, I should be able to increase the sales of ore monthly. The directors, therefore, sanctioned an extension of floors and the erection of additional machinery, comprising water-wheels, Blake's stone breakers, Green's two and four compartment jiggers, stamps, &c. acting by hand, trunks, &c. A new ore bin or depot for the dressed ore was likewise put up adjacent to the dressing-floors, and the accumulation of ore from the mine more than kept pace with the extension of floors and the erection of machinery, by the fact that night dressing was resorted to for want of space and appliances to dress with; and the sales were gradually augmented from about 30 tons to 170 tons of ore for the month. There was, however, a reaction at this stage of affairs, owing to the great demand for labour by the owners of coal and iron mines, the papers teeming with advertisements for miners, who could earn from 10*l.* to 14*l.* per month—about three times as much as they were paid by the Caldbeck Fels Mining Company; and our men left us for the iron and coal mines in groups of 20 and 30 at a time, until our numbers were reduced in a few months from over 200 hands down to 47, and our monthly returns, of course, fell off in proportion to the loss of men. But there are shareholders in the company who made no allowance for this great loss of hands, over which I had no control whatever. Here I resign my management, and Capt. Polglase is appointed the manager. His successor entered upon his duties in the month of April, 1874, under very different auspices to his predecessor. April 3, 1869, he had 6000*l.* placed at his disposal. He had a quantity of stores in the mine; large reserves of ore discovered and laid open for him; and the machinery throughout the mine replete by the erection of the drawing-gear at the junction or copper shaft. With these advantages at his fingers' ends, what has he achieved? We are informed of a serious loss every month in succession for fifteen months, and the new capital—6000*l.*—is about front over and above the proceeds of the mine, and the company near bankruptcy, an event without parallel even in a short time with such a prospect at his command; hence the demur and grudge amongst the shareholders in consequence, and they request an explanation. "Gentlemen, the water is in at the junction or copper shaft," is the answer given, which has served to cloak Capt. Polglase's incompetency to manage with skill and economy, and the company is nearly insolvent. I was the first to urge upon the directors the propriety of preparing at the junction or copper shaft for permanent operations below the deep adit on the north and great south lodes, and recommended that a 30-ft. diameter water-wheel, by about 2½ ft. breast, be erected on the said shaft, which would cut about 350 fathoms from the mouth of the deep adit, and about 90 fms. below the summit of the hill. The excavations for the wheel were made, and the machinery erected complete and in work in eight weeks. The wheel was put to work early in July, 1873, to pump from the 20, and it worked through the summer, the autumn, the winter, and the spring months, to the last of March, 1874, when my services with the Caldbeck Fels Mining Company terminated. The water never accumulated in the junction or copper shaft, it for it was very lavishly, but we forego doing so for the safety of the wheel and its appliances. Capt. Polglase, regardless of the machinery, or a want of discretion on his part, fixed timber, &c., to lodge the debris, and commenced a cross-cut a little above the wheel-case to reach the copper, but got next to none; ere long the timber gave way, and I am told about 40 tons of stuff, consisting of rocks of spar from 1 cwt. to ½ ton weight came down on the wheel building, damaging the backing and buckets to a shameful extent; in fact, the obstruction was such as to lift this massive wheel out of its bearings, and throw it in an oblique direction, and it worked a week or more without a brass or brasses underneath the axle, with the segments cutting their way into the wheel-case. The wheel, in consequence, is greatly shattered, thrown out of truth, and its power greatly diminished; and, unless there is an overwhelming stream of water now applied, the effect will be somewhat insufficient, as a matter of course. But it may be easily remedied yet for both pumping and drawing to perfection, and the steam-engines erected by Capt. Polglase be dispensed with, likewise the gross expense incurred daily by such a process.

Capt. Polglase, under his management as manager, infringed upon my rights in taking credit for discovering the lead and copper on the south lode at the junction or copper shaft. I will be brief in my endeavour to decide this question, and quote extracts from the half-yearly meeting of the shareholders held Feb. 14, 1873, fully twelve months before Capt. Polglase saw Caldbeck Fels Mine. Col. Salkeld occupied the chair. There were also present Sir Robert Briscoe, Bart., Mr. William Banks, Mr. E. Banks, Col. Provost, Mr. Saul, Mr. Noble (of the Isle of Man), Mr. Brockbank, Mr. Mulcaster, Dr. Tiffen, Mr. Crosswaith, Dr. Arras, Mr. James Irving, and Mr. Elliot.

Mr. Noble seconded the adoption of the report, and said he congratulated them on the very favourable report presented by Capt. Hawke. He accompanied his colleagues to the mine yesterday, and he was much pleased to find the very efficient and well laid-out washing-floors they had. The next point was the pitch, which was yielding copper and lead ores worth 50*l.* per fathom. Specimens of the ore were on the washing-floors, and more beautiful ore was never seen in any mine anywhere. Capt. Hawke had not taken the whole of the lode yet that was in the 10 south-east, but he was setting to work in the adit level, and it would be contrary to all mining experience if it did not come to a more valuable vein in the 20.

Extract from my report dated Sept. 5, 1873:—"We have a pitch in the 20 south-east, on the south lode at the junction or copper shaft, worth for lead and copper ores 75 cwt. per fathom." Extract from my report dated Sept. 17, 1873:—"The pitch in the 10 south-east, on the south lode at the junction or copper shaft, is worth for lead and copper ores from 75 to 80 cwt. per fathom." Extract from my report dated Feb. 3, 1874:—"We are within a few feet in the 20 south-east to the course of ore laid open on the south lode, 10 fms. level above."

Please observe that these extracts upon this discovery of ore dates from Feb. 14, 1873, to Feb. 14, 1874, fully twelve months before Capt. Polglase saw the mine, and yet he would try to word and shape things to take the credit for what has caused me so much mental and physical exertion. Regarding the produce of ore at present from the north lode in the western part of the mine. We struck into it at the 90 or deep adit west in the year 1870, twelve months after my appointment as manager, and followed the ore from the 90 to the 80, and about 5 fms. above this level near to the 70 during my captaincy. I quote extract of my report dated Feb. 3, 1874:—"We have two pitches in back of the 80 south lode, worth on an average for lead and copper 15 fms. per fathom." The ore now got by Capt. Polglase in the 80 and 70 is a continuation of the ore that I discovered and worked on for several years. The inhabitants of Caldbeck—I allude to the miners—know that Capt. Polglase has not discovered 5s. worth of ore for his employers the whole of the time he has been engaged in their services, but merely taking away the ore that I discovered for him in a manner resulting in a serious loss to the company when it should be otherwise.

I notice Captain Polglase's remarks at the last half-yearly meeting of the shareholders that there is no north lode. His assertion in this instance will have little effect on the mining world. There are mining authorities conversant with the existence of a north lode in Caldbeck Fels Mine whose opinions are entitled to great weight, and his sayings and doings are altogether fallacious.

The lode in question is proved by cross cuts in several places in the mine for a distance of over 350 fms. as a distinct and parallel lode, within about 10 fms. to the south lode. The produce from the two lodes does not characterise—there is a wide margin. The lead from the north lode comprises a fine brilliant grain, and the produce from the south lode is lead with a large grain, with a very dark or black hue; in fact, they are two distinct lodes, and have no connection whatever with each other. I might refer to a dozen mine agents, and all the miners in this locality who know the mine well, who would concur with me that the existence of a north lode in Caldbeck Fels Mine is too conclusive to admit of doubt. Capt. Muse,

the lord's agent, has been in the habit of visiting the mine regularly. I would like to elicit from him his views regarding Capt. Polglase's sayings as to the existence of a north lode. I notice likewise his remarks upon a shaft in the western part of the mine. Has Capt. Polglase ever examined this shaft or the levels, beginning at the 20, the first level from the summit of the hill, down to the 30, 40, 50, and 60? The latter he may have seen. But is he not a stranger up to this date to the other levels spoken of, and never ascertained what the prospects in these ends really are? I examined within a few days after entering upon my duties with this company the whole of these workings, and attach in consequence but little importance to the value of the deep adit west, unless a decided change of ground occurs. I reported to this effect on Aug. 29, 1873, and what money there has been wasted over it of late. There are, of course, exceptions to the rule, and a pocket of ore by chance may possibly be met with in this part. But there is no bunch of ore or ore to any extent that is known to exist in this direction of the least value, and the company has no prospect ahead of the 90 west.

I shall now speak of the 20, just below the top of the hill, and the 30 and 60 in succession, likewise the shaft referred to, all of which are a long way in advance of the 90; and no discovery whatever has been made in this new and whole ground. I argue there is no prospect to warrant the 90 being prosecuted. I do not mean to speak disparagingly of the Caldbeck Fels mining property because there is no prospect in the mine to the extreme west. There are about two miles in length on the course of the lodes in arrears of this point, that indicate results second to none in Great Britain, and I have worried and signed during my service for a little money to develop it; but, unfortunately, none was furnished me.

Captain Polglase is likely a good accountant, and he can indite a very plausible letter for his directors, and with his quill put it on paper with a great dash, and when we say this of him we do him justice; but this does not constitute a practical miner. I would remark that this paragraph is merely the introduction to a very long epistle regarding Caldbeck Fels Mine and the present management which I am again necessitated to write.

Greenside Cottage, Caldbeck, by Wytton, Cumberland, Sept. 28.

[For remainder of Original Correspondence, see to-day's Journal.]

CLIFTON SILVER MINING COMPANY.

THE COMMITTEE'S REPORT TO THE SHAREHOLDERS.

The Committee appointed at the Special General Meeting, held on July 9 last, to investigate the present position of the company, beg now to lay before you their report so far as they have been enabled to draw their conclusions from the data placed at their disposal. For the information of those shareholders who were not present at the last meeting, it may be as well to state that it was called for the purpose of gaining their consent to "wind-up the company voluntarily." "To consent to an immediate foreclosure at the hands of the trustees for bondholders, leaving to them without let or hindrance the task of further developing the property or of abandoning it, as they may think fit." At the same meeting there were 19 shareholders present in person and 48 represented by proxy, 12 in favour of the Chairman—Mr. J. C. Davis—and 36 deputing Mr. J. C. Fuller to represent their interests, or in default Mr. Thomas Orchard. The shareholders present were unanimous in voting against the resolution for winding-up the company, and the proxies held by Mr. J. C. Fuller carried the meeting, which appointed a committee of investigation, who undertook the task of laying before you the present position of the company. This company was formed in 1871, with a capital of 35,000*l.*, of which 30,000*l.* was called up. Of this amount 13,500*l.* was available for working capital, including the incidental expenses of forming the company. With the exception of a few hundred pounds this large amount was expended when the last balance-sheet was made up to Sept. 30, 1874. For some months previous to this you are aware that the mine was closed down for want of funds to carry on the development. In this report it is not our intention to reiterate what has been repeatedly said about the mismanagement. The board of directors, by whom all local appointments are made, have been singularly fortunate in their choice. The position of the company at present arises from the passing of a resolution on Dec. 15 last, a meeting for which was duly convened, and to which you were all invited to attend, to the effect—"That the directors be and are hereby authorised to offer the authorised issue of 2000*l.* mortgage debenture bonds, bearing 10 per cent. per annum interest, and that the holders for the time being of such bonds, until they be paid off, be entitled to receive 50 per cent. of the net proceeds of the company." The meeting was so sparsely attended that this resolution, so fatal in its effects to the majority of the shareholders, was carried. At the usual confirmatory meeting, held on January 12 last, at which you were invited to be present, but two shareholders only responded to the call, and the resolution was confirmed by the vote of the directors, in the proportion of three for the resolution and two against it. Your property was accordingly mortgaged for 2000*l.* Of this amount 1650*l.* has been raised, and mortgage debenture bonds issued. Every shareholder was entitled to subscribe *pro rata* with his present holdings. However, only 17 shareholders subscribed before the 15th of Jan. 1875, and the Pennsylvania Lead Company took 500*l.* after its representative had carefully inspected the property. A contract had been previously arranged between your company and the Pennsylvania Lead Company to take all your galena ore (at the rate of 60 tons per week) which would bear the cost of raising and smelting in Pittsburgh, which was fixed at 85*l.* 50 per ton, and would return to your company 80 per cent. of the value of the silver and lead. Estimates on a very low basis, derived from actual ore taken from the mine, showed a profit of 26 per cent. on a weekly return to the company of 390*l.* or 65*l.* 10s.

Work was accordingly commenced the beginning of last February on the mine, under the supervision of Mr. Eichbaum, appointed by the representative of the Pennsylvania Company. The first shipment of ore was made the latter end of February, amounting to 33 tons. This ore is sent away in a crude state to the railway depot in wagons, and then freighted in railway wagons in bulk to Pittsburgh. No sampling nor any assay can be made before it leaves the mine, therefore it requires great judgment to know whether the ore you are shipping is worth and can bear the heavy charge of 85*l.* 50 per ton. The returns from this ore, made by the Pennsylvania Company, showed a loss of over 300*l.*, proving that the ore had not been sufficiently and carefully dressed before being sent from the mine. Large quantities of ore were furnished to the Pennsylvania Company, but the so-called galena ore was so largely mixed in excess with iron and copper pyrites (each containing silver) that the agent was requested not to send that class of ore to the lead company.

On May 31 the agent had expended all the money raised by debenture bonds, and the mine was again closed down, and Mr. Eichbaum returned to Detroit, whence he came. Mr. Eichbaum having failed to send over to the company a detailed statement of the expenditure of the 1650*l.*, we are unable to learn how much of this money was expended in developing the mine, but we see two heavy claims, amounting to 2800*l.* (365*l.*), old liabilities of the company, have been satisfied, and Mr. Eichbaum's salary, from Jan. 1 to Oct. 16, has been fully paid, amounting to 2375*l.* (432*l.*), nine and a half months, at 250*l.* per month. Law and other charges have also been paid, amounting to about 150*l.*, being a total expenditure of 5500*l.* on a fund of 1650*l.*, raised for the purpose of developing the mine. It cannot be surprising, therefore, that the mine was again shut down after only four months' work. Mr. Eichbaum has sent over to the company voluminous letters, setting forth the value and extent of the property. To any shareholder who will take the trouble to read them they are of the greatest interest. He speaks of large quantities of low-grade ore in all the workings. On Feb. 20 he writes, "I have over 32 tons of ore on hand, and was offered 50 per ton for it on the spot." On April 7 he writes, "I have on hand 35 tons second-class ore—13 tons of 25 cwt. of silver, and 22 tons of 18 cwt. of silver and 18 tons of 15 cwt. of lead, 15 tons of 10 cwt. of lead, and 15 tons of 5 cwt. of lead, and found a large body of ore in the foot wall of the tunnel." On May 15 he writes, "For every ton of lead ore sorted out there are dumped from 10 to 25 tons of iron and copper pyrites, containing from 250 to 500 oz. of silver. Every ton of lead ore I have mined since I have been here has had to bear the expense of mining 15 to 25 tons of pyrites, which same pyrites contain in every case more silver than the lead."

In a following letter he states that he has consulted with the most skilled man in Colorado on the subject of smelting ores, and they both are of opinion that a smelting furnace should be built at or near the mine, and for the company to smelt their own ores, and thus save the heavy cost of freight, &c. He adds—"Let me say definitely that there is no middle course in this matter. It is certain that this mine can pay in no other way than by erecting a furnace, but in this way it can be made a source of profit to the company. This enormous vein of low-grade ore, that can easily furnish 10, 20, or 40 tons per day of lead, copper, and silver-bearing pyrites, can be made to pay splendid dividends, but it can never be done while 15-20ths of the ore goes to the dump, or by riding it on cars until its value is eaten up by expenses."

This is only a sample of the numerous letters he has written on the subject. Thus far we have stated to you facts as we have gathered them by investigation. We now come to the more practical and important part, as to what steps can be taken to relieve the company of its present difficulties. Its first liability is the payment of its coupon, due to debenture holders on Oct. 1, amounting to 82*l.* 10s. Certain miners and tradesmen in Colorado have secured liens on the property, amounting to 2500*l.* or more, which, if not paid before the middle of the year, the property will be sold. Even this is not so bad as it looks, for the company has power to redeem their property within six months from the date of sale, on payment of its liabilities, with 10 per cent. interest. There is no fear of the property falling into other hands than the debenture bondholders, for one of them writing to the secretary says—"If the Clifton Company will not raise funds others will, and take the property." It is evident there are those who think highly of the property, and failing the company, intend to work it and comply with the opinions of Mr. Eichbaum, and make it pay largely. An estimate has been made that, in order to put up a furnace, pay off present liabilities, and provide sufficient working capital to carry out the suggestions of Mr. Eichbaum to a successful issue, a sum of 4350*l.* would have to be raised. A scheme which appears practicable has been suggested, and it is that the present company should be wound up voluntarily, and a new one formed, with a nominal capital of (say) 15,000*l.* The question arises, how can this sum of money be raised? There are 125 shareholders, many of them men of influence, whose names induced others of smaller means to embark in this enterprise. To these the loss of the investment would fall very heavy. As is usual in cases of this kind, there are the few who are always ready to bear the burden of the calls made if they see there is any reasonable chance of success being attained. There are those who are unable to do this, and there are others who are quite able, but from want of interest in the undertaking, and other causes, neither attend meetings nor take any interest whatever in the affairs of the company.

It is the opinion of the committee that the few who are willing and anxious to see the company resuscitated should not have to bear the entire *onus* of assisting those who are unable, and more especially those who are unwilling, to bear their part. To meet such an emergency as this, and to raise (say) 4350*l.*, it is proposed that every shareholder should subscribe 15*l.* per share, which would be 15 per cent. of his holdings, towards raising debenture bonds, and that those who cannot do this should give up (say) 25 per cent. of their interest, which is now valueless, as a bonus to those who may be willing to subscribe and form a new company, in which all would be interested. To carry out such a scheme satisfactorily every shareholder must send in his intentions before a final arrangement could be made, and it is hoped that the proposition may be received by the shareholders in the spirit that it is intended for the mutual benefit of all interested.

It is possible to find someone who would finance the necessary amount by taking, as a bonus, stock in the company, and the following scheme is suggested:—The present shareholders to receive in shares 10,000*l.* in a new company, to be divided *pro rata* with their present holdings, having a nominal capital of 15,000*l.* 2000*l.* in shares to be given as a bonus for raising the required capital, and 3000*l.* to be

STOPPING HORSES BY ELECTRICITY.—It is proposed by Mr. LAYCOCK, of Whittington, Derby, the suggestion being patented, to stop or retard the speed of horses by means of electric electricity by means of a communication with a magnetic machine or galvanic battery, and passing a current through the mouth or different parts of the animal. Also to urge the animal to increased speed by similar means applied to different parts of the animal.

FOREIGN MINING AND METALLURGY.

There is little fresh to report in connection with the French iron trade. Nothing indicates the probability of an early change for the better, except, perhaps, an announcement, which is regarded as semi-official, that France requires a seventh network of 6000 miles of railway, and that measures are being taken to endow her with these additional means of communication, through the medium of the six great companies. It is calculated that the additional subvention which the State would have to give to the companies to attain the desired object would involve an annual charge of the sum of 2,000,000*l.* to the Treasury, of which about 1,400,000*l.* would be recovered in the form of traffic profits, leaving only a net addition of 600,000*l.* to the public burthens of the nation, in consideration of which the country would be endowed with 16,000 miles more railway.

Copper has been firm and tending upwards at Paris. The German copper markets have presented little change; prices have been well maintained. At Rotterdam tin has continued firm, although the business done has been of no great importance. Some transactions have taken place in Banca at 53*l.*; Billiton has been purchased at 50*l.* Tin has been advancing at Paris, and in Germany the tone of the article has improved. A fall has occurred in Spanish lead at Paris. The German lead markets have remained firm. Rolled Vieille Montagne zinc is quoted upon the French markets at 34*l.* per ton. Only a restricted business has been passing upon the German zinc markets, but prices have been very firm.

The intelligence received as to the general condition of the French coal trade is somewhat contradictory and indecisive. Prices are extremely variable, comparing one locality with another. Belgian and German coalowners are competing with each other in the department of the Nord, and the former are apparently the most successful. The basin of the Nord does not produce so much coal as it consumes, and therefore there is nothing surprising in considerable imports being made, but foreign purveyors are carrying on a keen competition with each other. Prices are not likely to fall either in the Nord or in the Pas-de-Calais, if they did the fall would not be an unmixed benefit, as the reduction would have a tendency to check local production. In the basins of the Loire and the Rhone the state of affairs remains unfavourable. Unwashed coke has been selling at 1*l.* to 1*l.* 6*s.* 10*d.* per ton. As regards the Paris market the arrivals have been active, but sales have been feeble; a certain amount of business has, however, been done in domestic qualities. The Belgian Coal Trade may be said to have improved during the

past month, but it still leaves something to be desired. There is nothing astonishing in this when account is taken of the long period during which the Belgian collieries languished in a complete state of torpor. Production appears to be now increasing, while stocks are comparatively small, and the longer intending purchasers wait the more they will probably have to pay for any coal which they may purchase. Freights from Charleroi to Paris have slightly advanced.

Arrangements have been made for the sale of 2000 tons of old Vignoles rails withdrawn from the Belgian State lines in 1875. These old rails have been purchased at 3*l.* 4*s.* 2*d.* per ton. Another description of old rails to be taken from the Belgian State system has been disposed of upon somewhat lower terms than those indicated in the last arrangements on the subject. The John Cockerill Company has deemed it advisable to issue a circular on terms which are very advantageous to intending purchasers. The Turkish Government has issued an Imperial ordinance exempting from customs duties for a period of 15 years steam-engines and other motors imported for the first installation of ironworks and manufactories. An adjudication for 18,000 tons of Bessemer steel rails with accessories is about to take place at Dresden.

ELECTRO-MAGNETIC SIGNALLING APPARATUS.—The chief feature of novelty in the invention of Mr. W. N. Haggard, of Fowkes Buildings, is the employment of a rotatory or revolving electro-magnet as the motive-power for actuating the signals to indicate "safety." Another novelty is the employment of a swivel-shaft, carrying a free wheel and a sliding toothed piece, a notched segment, and gear for controlling the signals. Novelty is also claimed for the combination of contrivances which he employs for putting the rotatory magnet in action during the proper intervals. But he considers that this invention should properly be regarded as a complete apparatus, the essentials of which would be as follows:—The signals which constitute one set are controlled by a swivel-shaft working in a receptacle near the line. This shaft is influenced by springs or gravity to turn so as to put the signals to "danger." The shaft carries a freely axled-wheel and a sliding toothed piece, so worked by simple mechanism that when the shaft has put the signals to "danger" the sliding toothed piece engages with a toothed portion of the wheel, and when the shaft has put the signals to "safety" the sliding piece is disengaged from the wheel. This wheel is driven by a small cog-wheel, screw, or band-wheel attached to the spindle of a rotatory electro-magnet, which upon revolving under the influence of electricity winds up the shaft so as to put the signals to "safety." The shaft is retained in "safety" position by a projecting catch entering a notch in a segment attached to the shaft. The fulcrum-rod or axis of the lever segment which carries the projecting catch protrudes from an orifice in the receptacle, and is furnished with a rail lever or treadle, to be depressed by the wheel of a passing train. Contact in any electric wires is broken in this receptacle while the catch is in the notch, but is made and maintained when the catch is not in the notch. When the signals ought to be put to "safety" the following

events occur:—The train-wheels depress a second lever, which turns a fulcrum-rod, which enters a second receptacle connected with the first receptacle by the electric wires. The turning of the fulcrum-rod causes the approach of an armature to an electro-magnet, and completes the circuit of the wire or wires.

EXCAVATING MACHINERY.—An improved double-acting combined helical and cylindrical excavator, and a simple and efficient handle for working the same, has been invented by Mr. E. W. Stonky, of Madras, the peculiar novel features of the excavator being that it can be opened at parts of its bottom, or of its bottom and cylindrical side, for and during the process of excavating, and closed when full of excavated material for and during the process of lifting or raising the same to the surface of the well and cylinder being sunk to be emptied. In each modification of its construction the excavator is made cylindrical in shape, with an open top, with bottom helical cutters and side cylindrical cutters. The improved handle is constructed so as to grip the excavator rod tightly, and so that it can be rapidly put on and taken on. In using the excavator the squared excavator rod is placed in the well as usual, and the excavator is then placed thereon, opened, and run down the rod till it rests on the material to be excavated. The handle having been put on the rod (and secured by a catch) the latter is turned thereby a few times, which causes the cutters of the excavator to penetrate into the material and fill the excavator. The rod is then turned in the opposite direction, which causes a false bottom (and false sides) to close certain openings in the bottom (and cylindrical side) of the excavator, which is then raised by means of a rope and crab winch, to be opened and emptied at the top of the well.

TIN-PLATES.—Some improvements in apparatus used in the manufacture of tin plates have been patented by Messrs. Richards and Williams, of Pontypool, and Matthews and Leventhal, of Salford. The invention relates to means of readily and quickly varying the speed or entirely arresting the movement of the rollers through which tin-plates are passed after having been dipped in the bath of tin. For this purpose each pair of rollers is connected by gearing to a drum on a shaft mounted in sliding bearings, which are connected to a lever by which the shaft and drum can be moved, and the drum can also be moved along the shaft by a screw. The surface of the drum is of a soft material, and is in contact with the face of a disc fixed on the prime moving shaft. According as the drum is shifted farther from or nearer to the centre of the said disc, the motion imparted to the rollers will be faster or slower; and, when by moving the drum shaft the drum is put out of contact with the disc, the motion of the rollers is stopped.

ROCK-BORING MACHINERY.—The invention of Mr. Wm. Ellis of Northcote-road, Wandsworth, relates to machines in which a jumper or drill is carried to and fro, so as to bore rocks or other hard substances by a succession of blows. By an arrangement of the parts actuating the valve or valves, the stroke may be lengthened or shortened, and the motive fluid may be made to cushion the piston at the end of each stroke, may be cut off at any part of the stroke, or may be used expansively. The jumper or drill is rotated at each backward stroke by an arrangement which prevents breakage in case of the jumper or drill jamming in a hole. The cylinder may be automatically fed forward in proportion as the jumper or drill penetrates the rock. The machine is attached to a stand or bar by an improved universal joint, which allows the machine to be pointed in any direction, and to be readily removed. The hollowed out end of the piston rod is so arranged as to firmly grip the jumper or drill without the sides wearing unequally. One form of stand on which the machine may be mounted is arranged so as to be suitable for very uneven ground.

MARSDEN'S IMPROVED STONE-BREAKING MACHINERY.

Fig. 1.

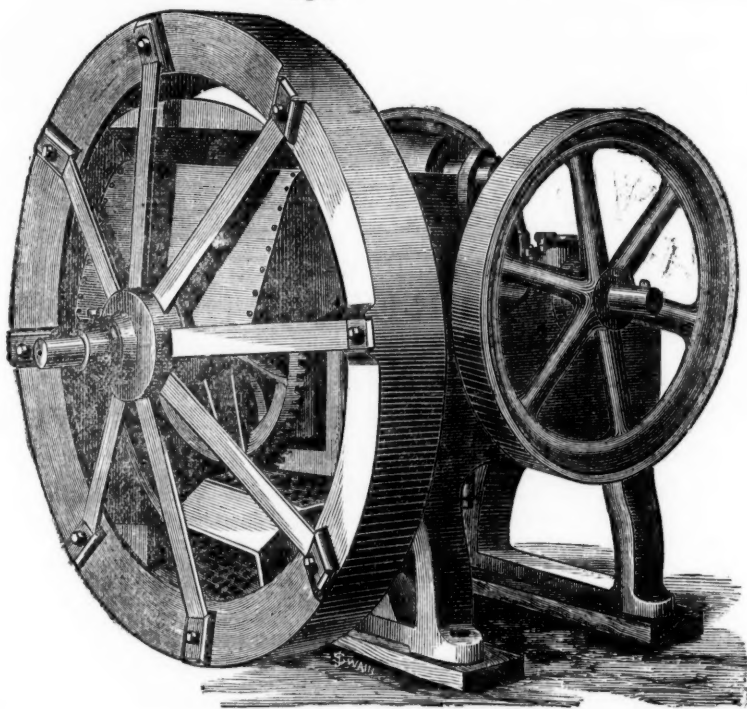


Fig. 2.

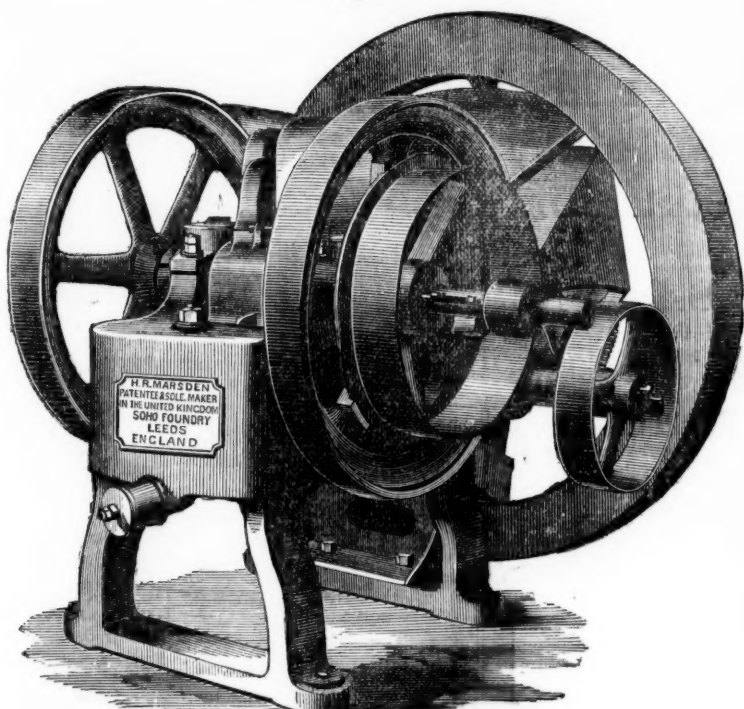
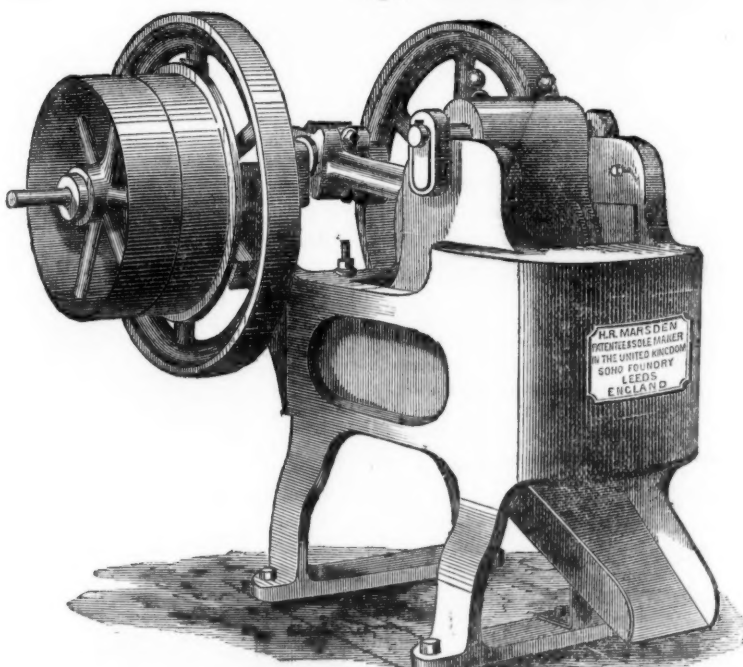


Fig. 3.



MARSDEN'S IMPROVED STONE-BREAKING MACHINERY.

For years the stone-breakers manufactured by Mr. H. R. Marsden, Soho Foundry, Leeds, have been regarded as an indispensable portion of the plant of all well-conducted mines, and taking advantage of improvements which suggest themselves in the practical application of the machines he is almost constantly introducing modifications to render them still more complete. Amongst the most recent improvements is the combined machine and elevator, front and back views of which are shown in Fig. 1 and Fig. 2 of the above engravings, Fig. 3 being the lever machine, which is as simple a form as yet produced. The combined machine and elevator has given considerable satisfaction for breaking ores, quartz, fossils, flints, coprolites, granites, &c., down to one uniform size. The object of the invention is to simplify the plant of anyone having to deal with hard substances, and to reduce these substances to powder and fine gravel without the possibility of large and flakey pieces being intermixed with the resulting sample. Take, for instance, miners, pottery, Dinas, and gannister clay, fire-brick manufactures, chemical works, ironworks, &c., where the principle of disintegration both of ores and fuel, in order to combine the same more intimately for reduction, is carried on.

The machine, as shown, can be made in all sizes, but it is preferable to take size which practice has determined the best—say, 15 by 9 in. This will reduce to about $\frac{1}{2}$ cubes 80 tons of orestuff per day. In Cornwall are to be seen rolls working with the raff wheel and returning the stuff that will not pass the screens to be re-crushed. This is exactly the position of this machine. All the material passed through the Blake machine is not necessarily reduced sufficiently the first time, but to accomplish this without further manual labour a shaking screen or riddle is interposed between the delivering orifice and the raff wheel, which screen delivers the fine below, and passes the coarse into the wheel, which is of cast-iron and wrought-iron arms, having internal buckets, to elevate the stuff and feed it into the mouth again. Practical miners have pronounced this arrangement excellent, and one greatly wanted, especially in making trials on the opening of new mining properties.

The machine weighs about 8 tons 10 cwt., and costs, we understand, 50 per cent. less than present machinery to do the same work. The machine, Fig. 3, is a front view of Mr. Marsden's lever machine, as exhibited at the Yorkshire Exhibition of Arts and Manufacture, and also similar to the one exhibited at the International Exhibition, South Kensington, last year, and awarded a medal. It is specially designed for fine crushing and for low speeds. The speed of the Blake machine being 250 revolutions per minute, this machine will effect the same amount of work with a speed of 125 revolutions. This is an important item where counter-shafting is objectionable or impossible to put up. The motion of the jaw is got from a crank shaft resting in short arms carried at the rear of

the machine, and having massive fly-wheels, to one of which is attached the driving pulley. To this crank is coupled the connecting-rod, and from thence to a vertical rock bar, or lever, having its fulcrum resting in dies, which are free to move horizontally in slots at the frame sides, which slots are covered by the name-plate.

At the lower extremity of this lever, and in the same plane as the fulcrum at each side, is a crease or notch, into which works a toggle-plate, its other end resting either in a notch in the swing-jaw or the toggle-block at the back of the machine; by this means, as the lever rocks to and fro, the toggle-plates, which in their normal position are straight, are—one elevated and the other depressed from the

straight line, thus shortening them in the direction of the length of the machine, and allowing the jaw to swing back. As these plates are placed twice in a straight line for each revolution of the crank two vibrations of the jaw are obtained.

The peculiar configuration of the operating faces is such, it will be understood, that the fluting is zig-zagged, the ridge being changed for the furrow, and vice versa, several times; this gives the additional wearing and crushing surface, and prevents the escape of any material in the flakey form, as was the case with the original machine. The size of the machine illustrated is 12 in. by 5 in.

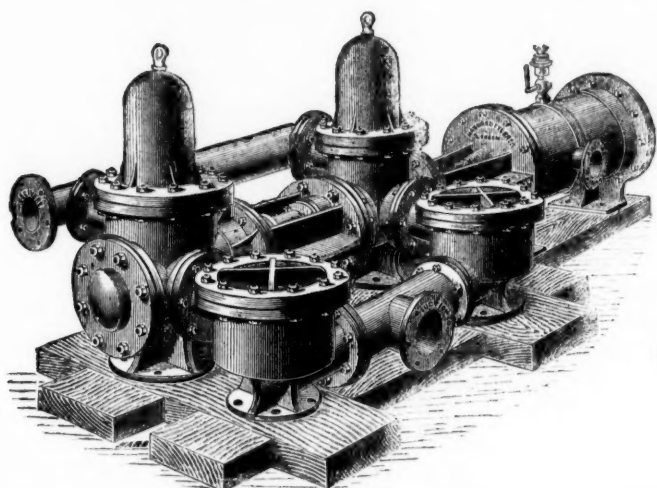
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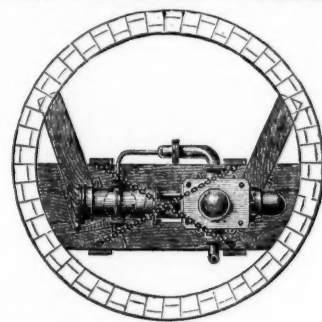
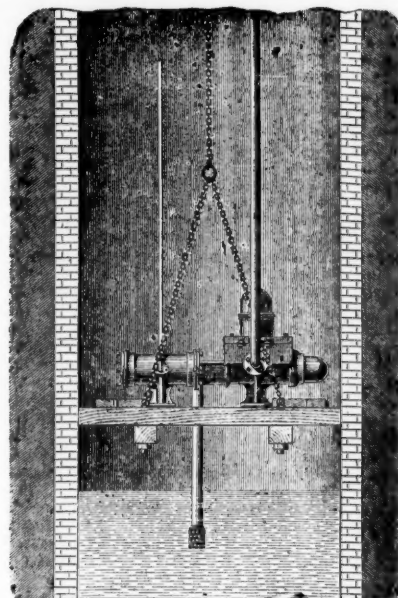
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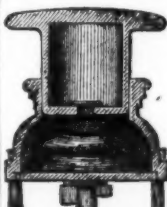
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THE "LEVET" ROCK DRILL.

SUPERIOR TO ALL OTHERS.



COPY OF TESTIMONIAL FROM THE ENGINEER, BLANZY MINES, FRANCE. Feb. 25, 1875.

I hereby certify that the new Rock Drill of C. Levet's System has worked at the Blanzey Mines since Nov. 20 without there being the slightest necessity for repair. Its results up to this date have been superior to the other Rock Drills employed in the said mines.

(Signed)
THE ENGINEER OF THE MINES, POUYMAIRAC.

THE SACCHARUM WORKS, SOUTHAMPTON.

ANGLO-BAVARIAN BREWERY.

GENTLEMEN.—We have much pleasure in stating that the "STANDARD" Steam Pumps supplied to us for these works, and for our Brewery at Shepton Mallet, give us entire satisfaction. The two first we had from you have been in use for 12 months, and they are still in good working order. THEY ARE ENTIRELY FREE FROM THE NOISE IN WORKING WHICH ALL OTHER STEAM PUMPS WE HAVE TRIED ARE SUBJECT TO; they throw a large quantity of liquor fully equal to the amount named in your Circular, and we can confidently recommend them in preference to any other pumps we have used.

(Signed)

Yours truly,
HILL, GARTON, AND CO.



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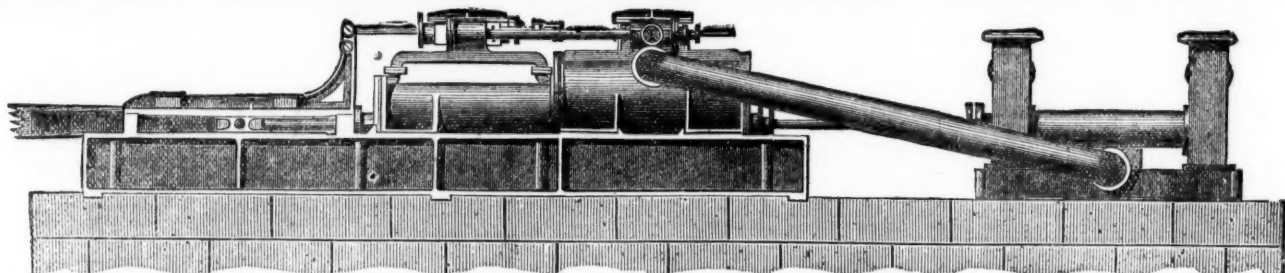
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Every description of Leather, India-rubber, and Gutta-percha for Engineering and General Mechanical purposes.

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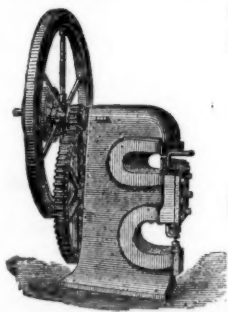
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Also, Single-cylinder Condensing Differential PUMPING ENGINES; Steam Pumps, of various kinds; Hydraulic Pumps, for dip workings; Winding Engines; Compound Rotative Engines; the Separate Condenser; High and Low Pressure Steam Boilers, &c.

SUN FOUNDRY, LEEDS.

FURTHER PARTICULARS ON APPLICATION



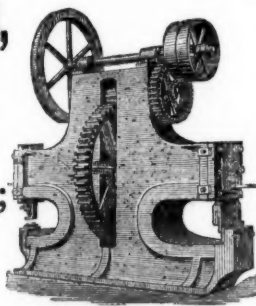
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Self-acting, Slide, and Screw-cutting
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PORTABLE ENGINES & THRASHING MACHINES.

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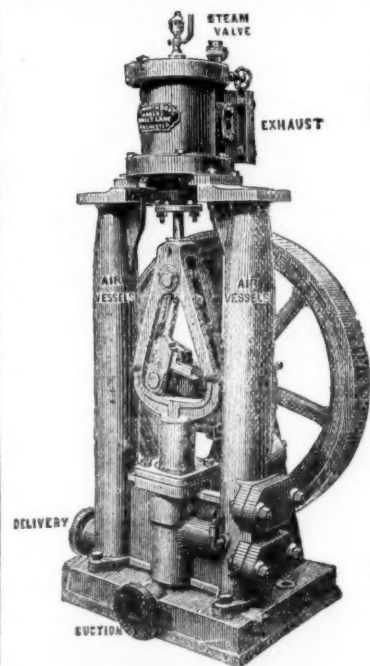
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Simplicity of Construction.
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ROAD METAL-MAKING MACHINES,

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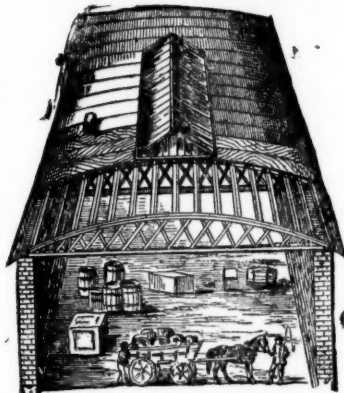
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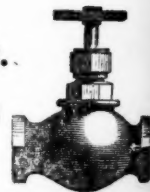
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